An atlas and classification of aquatic habitat on the east coast of Canada, with an evaluation of usage by the American eel

D.K. Cairns, J.-D. Dutil, S. Proulx, J.D. Mailhiot, M.-C. Bédard, A. Kervella, L.G. Godfrey, E.M. O'Brien, S.C. Daley, E. Fournier, J.P.N. Tomie and S.C. Courtenay

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ABSTRACT

Waters on the east coast of Canada from the Strait of Belle Isle to the US border and around St. Pierre and Miquelon, out to the 500 m isobath, were mapped and classified by degree of exposure to the open sea. Waters shoreward of a line joining the points where a 1.5 km diameter circle first contacts the coastline were classified as Sheltered. Waters seaward of a line joining points where a 15 km diameter circle first contacts the coastline were classified as Exposed. Waters between these zones were termed Semi-exposed. Sheltered, Semi-exposed, and Exposed waters of the study area totalled 9,648, 23,292, and 890,322 km^2, respectively. The St. Lawrence Estuary and Gulf, which were further classified by depth, contained 2,066 km^2 of intertidal habitat, 9,886 km^2 of waters of 0-10 m depth, and 219,366 km^2 of waters >10 m depth. American eel fisheries were most concentrated in the southern Gulf of St. Lawrence, and were also dispersed along the coastlines of the Atlantic and Fundy coasts of New Brunswick, Nova Scotia, and Newfoundland. Eels were not fished in most of the Quebec portion of the Gulf of St. Lawrence. Eel fishing locations in brackish and salt waters were primarily in Sheltered waters (93.8%), followed by Semi-exposed (6.0%) and Exposed (0.2%) waters. Research, exploratory, and commercial fisheries suggest that eels are common throughout Sheltered waters on the east coast of Canada. Waters within 1 km of an eel fishing location comprise 6.4% of Sheltered waters, 0.7% of Semi-exposed waters, and 0.01% of Exposed waters in the study area. Yellow and silver eel harvest rates ranged from 0 to 338 $kg/km^2/yr$ within statistical reporting areas. The Sheltered zone of the east coast of Canada can be considered an approximation of the brackish and salt water habitat of yellow American eels in this region. Of the 50,624 km of coastline in the study area, 7,098 km (14.0%) are adjacent to Exposed waters and 7,470 km are adjacent to Semi-exposed waters. This atlas, and map products posted in online archives, may serve a wide variety of purposes, including mapping of shellfish habitat and coastal erosion vulnerability.

RÉSUMÉ

Les eaux de la côte est du Canada du Détroit de Belle Isle à la frontière américaine et autour de Saint-Pierre et Miquelon, jusqu'à l'isobathe de 500 m, ont été cartographiées et classifiées par le degré d'exposition à la mer ouverte. Les eaux à l'intérieur d'une ligne qui joint les points où un cercle de 1,5 km de diamètre contacte la côte étaient classées comme Abritées. Les eaux à l'extérieur d'une ligne qui joint les points où un cercle de 15 km contacte la côte étaient classées comme Exposées. Les eaux entre ces zones étaient désignées Semi-exposées. Les eaux Abritées, Semi-exposées, et Exposées de l'aire d'étude totalisaient 9 648, 23 292, et 890 322 km^2, respectivement. L'estuaire et le golfe du Saint-Laurent, qui étaient en plus classifiés par profondeur, contenaient 2 066 km^2 d'habitat intertidal, 9 886 km^2 d'eaux de profondeur 0-10 m, et 219 366 km^2 d'eaux >10 m en profondeur. La pêche à l'anguille d'Amérique était la plus concentrée dans le sud du Golfe du Saint-Laurent, et était dispersée sur les côtes Atlantique et Fundy de Nouveau-Brunswick, Nouvelle-Écosse, et Terre-Neuve. Les anguilles ne sont pas pêchées dans la plupart de la partie québécoise du Golfe du Saint-Laurent. Les sites de pêche à l'anguille dans les eaux saumâtres et salées étaient principalement dans les eaux Abritées (93,8%), suivi par Semi-exposées (6,0%) et Exposées (0,2%). Les pêches exploratoires, commerciales, et de recherche suggèrent que les anguilles sont communes dans les eaux Abritées de la côte est du Canada. Les eaux en dedans de 1 km d'un site de pêche de l'anguille incluent 6,4% des eaux Abritées, 0,7% des eaux Semi-exposées, et 0,01% des eaux Exposées de l'aire d'étude. Le taux de récolte des anguilles jaunes et argentées dans les districts statistiques variaient entre 0 et 338 $kg/km^2/an$. La zone Abritée de la côte est du Canada peut être considérée une approximation de l'habitat saumâtre et salé des anguilles jaunes de la région. Des 50 624 km de côte dans l'aire d'étude, 7 098 km (14,0%) sont adjacents aux eaux Exposées et 7 470 sont adjacents aux eaux Semi-exposées. Cet atlas, et les produits cartographiques affichés dans les archives en ligne, peuvent servir une variété de fins, y compris la cartographie de l'habitat des mollusques et de la vulnérabilité à l'érosion côtière.

INTRODUCTION

Habitat classification schemes have a wide variety of uses in ecology and resource management. Numerous classification schemes have been proposed for the marine waters of the world (Cogan and Noji 2007, Greene et al. 2007, Halley and Jordan 2007, Kostylev and Hannah 2007, Madden and Grossman 2007, Philpott et al. 2007, Pickrill and Kostylev 2007, O'Boyle 2009 and Wilkinson et al. 2009). Wilkinson et al. (2009) divided waters off eastern North America into seven zones, including five that contact the coastline. DFO (2009) recommended three major zones for eastern Canada: the Gulf of St. Lawrence, the Newfoundland-Labrador Shelves, and the Scotian Shelf. Recently, multivariate techniques have been applied to large physical, chemical and biological databases to classify marine waters at finer scales. Using this approach, classification schemes have been set up for the Gulf of St. Lawrence (Dutil et al. 2011), the Newfoundland and Labrador Shelves (Pepin et al. 2010), and the Scotian Shelf (Zwanenburg et al. 2010).

Sheltered bays and estuaries form a habitat type that is distinct from open marine waters. Such habitats have faunal assemblages that differ from those of both fresh waters and exposed ocean waters (Day et al. 1989). Sheltered bays and estuaries are important ecologically, and are often the sites of economically valuable fisheries for shellfish and finfish, as well as aquaculture operations. For the conterminous US states, Dahl (2011) classified coastal waters as marine subtidal, marine intertidal, estuarine subtidal, and estuarine intertidal. Total areas for these habitat categories were given for the 48 conterminous states, but no regional or state breakdowns were supplied. Habitats identified by Dahl (2011) were defined qualitatively, meaning that classification depended, at least to some extent, on the subjective interpretation of the classifier. ASMFC (2000) calculated the area of waters between coastal headlands in the eastern US for the >25 ppt and the 0.5-25 ppt salinity zones. However, sheltered bays often have salinities >25 ppt, and the >25 ppt zones mapped by ASMFC (2000) included large areas that are fully exposed to the open sea.

A scheme to classify and inventory eastern North America's sheltered bay and estuary habitat would be valuable to those interested in the conservation and management of living resources that occupy such habitats. Ideally, such a scheme would have the same statistical rigor as those recently applied to open marine waters (Pepin et al. 2010, Zwanenburg et al. 2010, Dutil et al. 2011). However, data to implement such an approach are unavailable for much of the bay and estuary habitat of eastern North America. Research vessel surveys upon which the open marine water classifications are based do not cover sheltered bays and estuaries, which are generally too shallow to allow passage of ocean-going ships. Detailed oceanographic data have been collected in some bays and estuaries, but there is no standardization in type of data collected, and many bays and estuaries have been subject to little or no oceanographic investigations.

This atlas proposes a new classification scheme for the coastal waters of eastern North America, that is based on cartographic data that are available for the entire region. This work is prompted by the conservation needs of the American eel (*Anguilla rostrata*). This species is facultatively catadromous, which means that some eels spend their yellow (growth) period in fresh water and some spend it in brackish or salt water (Jessop et al. 2008). In the United States, the US Department of the Interior (2007) concluded that listing the American eel under the Endangered Species Act was unwarranted, in part because of the continuing availability of large amounts of estuarine and marine habitat for eel growth. In Canada, COSEWIC (2006) assessed the Canadian portion of the American eel stock as Special Concern. This evaluation contrasted increasing trends on some parts of Canada's east coast with a severe decline in the upper St. Lawrence River. In both countries, uncertainties in eel conservation status revolve to a large extent around the role of brackish and salt growth areas (ICES 2009). These uncertainties have led to new Endangered Species Act and COSEWIC reviews which are currently (2012) underway.

This document implements the classification scheme for eastern Canadian waters from the Strait of Belle Isle to the United States border, and evaluates the relation between classification categories and American eel distribution as indicated by commercial and research fishing records. A parallel atlas, which applies the same classification approach to waters of the US east coast, is currently in preparation.

METHODS

OVERALL APPROACH

Yellow American eels that occupy brackish and salt habitats commonly occur in shallow and sheltered waters, and records in deep and exposed marine waters are rare (ICES 2009). We therefore sought to develop a classification scheme likely to define at least approximately the brackish and salt-water growth habitat of the yellow eel. At the same time, we wanted our classification products to be useful to a broad range of natural resource scientists and managers. The principles guiding the classification process were:

1. Biological relevance - must be based on parameters that influence the distribution and abundance of a variety of aquatic species.
2. Broad applicability - must be applicable to the entire east coast of North America.

3. Modest resource requirements - it must be possible to classify large areas with limited labour input. Collection of new field data is excluded.
4. Repeatability - workers who independently apply the project's methodology should arrive at the same results.
5. Quality control - the classification results are to be disseminated in a publication series that is subject to peer review.
6. Accessibility - project outputs, including the published report and associated GIS layers, are to be permanently posted in publicly accessible archives.

The key criterion in our classification scheme is degree of exposure to the open sea. This atlas classifies waters from the Strait of Belle Isle to the US border by this criterion. We further classify waters of the Estuary and Gulf of St. Lawrence by depth. For a classification system to be useful, it is necessary to know the relation between classification results and the distribution of species of interest. We used location of commercial eel fishing sites as a proxy for eel distribution, and compared this with findings of the classification scheme.

BASE MAPS

The study area of this atlas is the brackish and salt waters of eastern Canada from the Strait of Belle Isle to the US border, from the coast to the 500 m isobath. A pocket of deep water (>500 m depth, area 1,071 km^2) in the Cabot Strait is included in the study area. Waters surrounding the French islands of St. Pierre and Miquelon are also included. Cartography was performed with ArcGIS 9.2 and 9.3 and MapInfo 8.5. Maps are presented in the NAD 83 projection.

A base map was assembled from 1:50,000 map sheets of Natural Resources Canada's (NRCAN) National Topographic Series, which is available at http://www.geogratis.ca/geogratis/en/download/topographic.html. The coastline given in these maps represents the high tide line. The coastline of the base map was drawn to include estuaries to the approximate limit of salt penetration. Upper estuary limits were based on a marked narrowing of the river, on the upstream extent of the intertidal zone depicted on CANVEC maps (see below), and on local knowledge and literature reports. The 500 m isobath used to define the outer limit of the study area is from NRCAN's North American bathymetry atlas, available at http://geogratis.cgdi.gc.ca/geogratis/en/option/select.do?id=EF8C8801-EA6F-801F-823D-A3B52E4FEE9A). Coastline lengths were measured on this base map.

Waters within the study area were divided into geographic sectors, as defined in Table 1 and mapped in Fig. 1. In the Gulf of St. Lawrence, the outer boundaries of sectors were lines of equidistance between land masses. In the Atlantic Ocean and the Bay of Fundy, the outer boundaries of sectors are the 500 m isobath, and Canada-France and Canada-US boundaries as shown on Canadian Hydrographic Service (CHS) nautical charts 4011, 4015, and 4047.

In this atlas the St. Lawrence Estuary refers to the area between Île-aux-Grues and Pointe-des-Monts (Fig 1). The Gulf of St. Lawrence is bounded on the west by a line between Pointe-des-Monts and the south shore of the St. Lawrence estuary, on the northeast by a line between the Quebec-Labrador border and Anchor Point, on the east by a line between Cape Ray and the northern tip of St. Paul Island and a line between the southern tip of St. Paul Island and the boundary between Inverness and Victoria Counties, and on the southeast by the Canso Causeway (Fig. 1). The southern Gulf of St. Lawrence consists of Gulf waters south of a line starting at Cap Gaspé, and then running along the 200 m depth contour on the south side of the Laurentian Channel to Cabot Strait (Fig. 1). Remaining Gulf waters are classified as the northern Gulf of St. Lawrence. Gulf Maritimes refers to the Gulf of St. Lawrence waters of New Brunswick, Nova Scotia, and Prince Edward Island. Atlantic-Newfoundland refers to waters of Newfoundland-Strait of Belle Isle, and the northeast, east, and south coasts of Newfoundland (Fig. 1). Scotia-Fundy refers to Atlantic Ocean and Bay of Fundy waters that are adjacent to New Brunswick or Nova Scotia. Atlantic-Fundy refers to both Newfoundland-Atlantic and Scotia-Fundy.

Detailed cartographic data are displayed by page blocks (Fig. 2). Fisheries data are presented by sectors in Quebec, counties in the Maritime Provinces (Fig. 3), and Statistical Districts in Newfoundland (Fig. 4). County maps for New Brunswick and Prince Edward Island were downloaded from http://www.snb.ca/gdam-igec/e/2900e_1.asp and http://www.gov.pe.ca/gis/download.php3?name=countylines&file_format=MIF&referer=http%3A%2F%2Fwww.gov.pe.ca%2Fgis%2Findex.php3%3Fnumber%3D77584%26lang%3DE, respectively. The county map for Nova Scotia was provided by Kevin Legere of the Nova Scotia Geomatics Centre, Amherst NS. The map of Newfoundland Statistical Districts was drawn from Anon. (1970).

EXPOSURE CLASSIFICATION

Waters within the study area were classed as Sheltered, Semi-exposed, or Exposed, based on the degree of exposure to the open sea. Sheltered zones were defined with the aid of a 1.5 km diameter circle (Fig. 5). The circle was moved toward an inlet until it contacted the coast at two points. A line drawn between these points was taken as the outer boundary of the Sheltered zone. The Sheltered zone included waters to the upper limit of estuaries, as drawn on the base map. Semi-exposed zones were defined with a 15 km diameter circle, which was

moved toward an inlet until it contacted two points on the coastline. Waters outside a line drawn between these points were taken to be Exposed, and waters between the Sheltered and the Exposed zones were considered to be Semi-exposed. The outer boundaries of Exposed zones were defined by lines of equidistance between land masses, the 500 m contour, or international boundaries (see above).

In situations where small islands lie off a coast, application of the circle method could lead to designations of Sheltered or Semi-exposed for sites where the island would be too small to have a substantial sheltering effect. To avoid this, islands fitting inside a 0.15 km diameter circle were ignored for the purpose of mapping Sheltered zones. Breakwaters and bridge piers that are isolated from the mainland were considered as islands for this purpose. Similarly, islands fitting inside a 1.5 km circle were ignored for the purpose of mapping Semi-exposed zones.

To avoid assigning Sheltered or Semi-exposed status to inlets with little concavity, minimum sizes were set. To be considered Sheltered, a water body had to contain at least 0.12071 km^2. This value is the area between a circle 1.5 km in diameter and the corner of a 1.5 km x 1.5 km square (Fig. 6). Minimum sizes for a water body to qualify as Semi-Exposed were set by two criteria. In Method 1, the minimum size used for Sheltered water bodies (0.12071 km^2) was also used in Semi-exposed classifications. In Method 2, the minimum size was set as the area between a circle 15 km in diameter and the corner of a 15 km x 15 km square (12.071 km^2).

In some cases, the outer boundary of the Semi-exposed zone as determined by the 15 km diameter circle was closer to shore than the outer boundary of the Sheltered Zone. In these situations the outer boundary of the Sheltered zone was taken as the inner boundary of the Exposed zone, without an intervening Semi-exposed zone.

A large enclosed water body may have sufficient fetch to allow the generation of substantial wind-driven waves, even if the water body's outlet to the sea is narrow. Hence any water body large enough to fully enclose a 15 km diameter circle was considered Semi-exposed, even if it would qualify as Sheltered based on the width of its outlet to the open sea. Bras d'Or Lake in Nova Scotia, whose outlet is only 0.32 km wide at its narrowest point, was the only water body in the study area to fit this criterion.

Areas of exposure zones in which Method 2 was used to define the Semi-exposed zone were tabulated and mapped for the entire study area. Areas calculated by Method 1 were tabulated for the St. Lawrence Estuary and Gulf only.

Detailed instructions for exposure zone classification are supplied by Bédard (2009) for ArcGIS and by Mailhiot (2009) for MapInfo.

DEPTH CLASSIFICATION

Intertidal zone

NRCAN's CANVEC series, available at http://www.geogratis.ca/geogratis/en/download/topographic.html, maps the intertidal zone of eastern Canada at 1:50,000 scale. CHS nautical charts also show the intertidal zone. On both map series, intertidal marshes with emergent vegetation are considered land. Kervella et al. (2010) compared intertidal zones from CANVEC maps and nautical charts at two locations. Topographic maps and nautical charts gave areas of 21.2 km^2 and 19.3 km^2 (respectively, 9.0% difference) at Île-Saint-Barnabé in the St. Lawrence Estuary and 66.0 km^2 and 48.5 km^2 (respectively, 26.5% difference) for Malpeque Bay, Prince Edward Island. Both CANVEC maps and nautical charts have limits with respect to intertidal zone mapping. In some areas of eastern New Brunswick, CANVEC maps show no intertidal zone, even though such a zone exists (D. Cairns, pers. obs.). In many areas of eastern Canada, only small scale nautical charts are available, which portray the intertidal zone at low resolution. We used the CANVEC series to map the intertidal zone because large-scale maps are available for the entire study area.

St. Lawrence Estuary and Gulf depths

Water depths were classified relative to chart datum, which is the level of Lower Low Water, Large Tide, or Lowest Normal Tide (CHS 2011). The boundary of the subtidal zone was taken as the low tide line from CANVEC maps where an intertidal zone was shown, and the coastline where no intertidal zone was shown. Depths of subtidal waters in the St. Lawrence Estuary and Gulf were classified by contouring algorithms, using the boundary of the subtidal zone as 0 depth, and soundings from a CHS database. In areas where few data were available in digitized format, additional depth records were obtained from point data and contour lines on nautical charts. Depth data and the 0 m line were transformed for use with ArcGIS software. Bathymetric grids were generated by interpolation using the Natural Neighbour method. Due to the very large number of soundings in areas covered by multibeam hydrographic surveys, one grid was produced for each 1:250,000 topographic sheet division. Depths were classified as 0-2, 2-3, 3-4, 4-6, 6-10 and >10 m, and converted to polygon format. Data from the various sheets were then merged into a single file which was matched with the intertidal zone layer and intersected with the exposure categories to obtain depth categories by exposure category.

Atlantic depths

We used a visual method to classify depths in three 50 km-wide transects on the east and south coasts of Newfoundland and the south shore of Nova Scotia (Fig. 2). Depth contour lines were drawn by eye from rasterized nautical charts of the largest available scale. We did not classify depths elsewhere in the Atlantic-Fundy region because the CHS soundings database is incomplete, and because we lacked sufficient resources to apply the time-consuming visual method.

Depth profiles

Depth profiles were drawn from the coastline to 10 km offshore at representative locations, based on depths interpolated from the CHS soundings database (St. Lawrence Estuary and Gulf, except Îles-de-la-Madeleine) and depth observations on rasterized or paper nautical charts (Îles-de-la-Madeleine and Atlantic-Fundy region). Names of locations where depths were profiled follow those given in NRCAN's Atlas of Canada (www.atlas.nrcan.gc.ca). The plots also show the approximate maximum tide height relative to chart datum based on tidal predictions at the nearest available station. Values were taken from tables (Quebec) and graphs (elsewhere) given in the CHS tidal web site (www.tides.gc.ca).

DISTRIBUTION AND HARVEST RATE OF EEL FISHERIES

Locations of elver fisheries in Newfoundland in 2008 were provided by the elver licence holder. Locations of other eel fisheries in Newfoundland and Labrador in 2005 and 2007 were derived from commercial logbooks (G. Veinott, pers. comm.). Locations of estuary trap fisheries in the St. Lawrence estuary in 2009 are from records of the Québec Ministère des ressources naturelles et de la faune (G. Verreault and R. Tardif, pers. comm.). Locations of eel fisheries in the southern Gulf of St. Lawrence for 2006 - winter 2010 are from interviews with DFO fisheries officers, conducted at local detachment offices during winter 2010. Locations of commercial (fyke, longline) eel fisheries in Îles-de-la-Madeleine in 2008 are from Richard (2008), and are based on interviews with fishers and visits to fishing sites. These locations are very similar to those given by Georges (2008). Locations of recreational spear fisheries in Îles-de-la-Madeleine in the winter of 2003-2004 are from Georges (2005). These locations are approximate, because Georges (2005) identifies lagoons in which eels are speared, but not exact fishing sites. Locations of yellow and silver eel fisheries in Scotia-Fundy in 2005-2007, and of elver fisheries for 1996-1999 and 2000-2003, are from commercial logbook programs (R. Bradford, C. Harvie, and G. Stevens, pers. comm.). Coordinates reported for some fishing locations were on the land side of the coastline, as shown by the base map. Fishing locations on land are likely due to small errors in GPS measurements or in digitizing points recorded on paper maps. In such cases fishing locations were shifted to the nearest point in water.

The area of habitat within 1 km and 5 km of commercial eel fishing locations was measured by first drawing circles around the locations with the GIS buffer function. Eel habitat within 1 and 5 km of fishing locations was then mapped and measured as the area of overlap between these circles and Sheltered, Semi-exposed, and Exposed zones.

Mean eel harvest rates (kg of yellow and silver eels/km^2/yr) in 2000-2009 were calculated for Sheltered zones by sector in the Gulf portion of Quebec, by county in the Maritime Provinces, and by Statistical District in Newfoundland. Landings are from Georges (2008) for Îles-de-la-Madeleine, Gilly (2010) and H. Goraguer, pers. comm., IFREMER, for St. Pierre and Miquelon, and from Cairns et al. (2007 and 2008), with updates from DFO statistics offices, for all other areas. Some eel harvest occurs outside the Sheltered zone. Landings in the Sheltered zone for an area were estimated as the product of reported landings for the area, and the proportion of commercial yellow and silver eel fishing locations in the area that occurred within the Sheltered zone. For purposes of calculating harvest rates, the area of the Sheltered zone was calculated as (intertidal zone/2) + subtidal zone, to account for the dewatering of the intertidal zone during each tidal cycle.

DATA DISTRIBUTION

Maps associated with this atlas, including base, boundary, habitat, and fishery maps, are posted in ArcGIS and MapInfo formats in an online archives (http://www.dfo-mpo.gc.ca/Library/345546.zip) and in a DVD distributed with the paper version of the atlas (Appendix A). Arc and MapInfo layers can also be opened and manipulated in Quantum GIS freeware. The online and DVD packages include maps in .jpg and layered .pdf format. The atlas itself is included in two .pdf versions. A 100 dpi version occupies 10 megabytes, and is small enough to e-mail. A 200 dpi version occupies 24 megabytes and is too large to e-mail on most systems, but can be readily transmitted via file transfer sites such as www.sendbigfiles.com.

RESULTS

EXPOSURE CLASSIFICATION

The study area is mapped by exposure and tide (intertidal, subtidal) categories in Fig. 7. Exposure and tide categories are shown by region in Figs. 8-10, by block in Figs. 11-37, and for transect areas in Figs. 38-40. Inset maps in Figs. 11-40 illustrate representative coastal areas at larger scales.

Areas of exposure and tide zones are given for the Estuary and Gulf of St. Lawrence in Tables 2 and 3, as calculated by Methods 1 and 2 respectively, and for

the full study area in Table 4, by Method 2. Total areas in the Estuary and Gulf differ slightly between Method 1 (231,328 km^2, Table 2) and Method 2 (231,318 km^2, Table 3). This difference of 0.004% is likely due to small editing errors and the limits of resolution of the GIS software. The area of Semi-exposed zones in the Estuary and Gulf calculated by Method 1 is 8.8% larger than that calculated by Method 2 (8,287 km^2, Method 1, Table 2; 7,613 km^2, Method 2, Table 3).

The study area has a total area of 913,262 km^2 (Table 4). Most waters are Exposed (880,322 km^2, 96.4%), and only small fractions are Semi-exposed (23,292 km^2, 2.6%) or Sheltered (9,648 km^2, 1.1%). Atlantic-Newfoundland and St. Pierre and Miquelon comprise 50.8% of the study area, with most of the remainder in the Gulf of St. Lawrence (24.0%) and Scotia-Fundy (23.8%) (Table 5). The St. Lawrence Estuary is 1.3% of the study area. The percent of Sheltered waters per region is highest in the St. Lawrence Estuary (3.5%), followed by the Gulf of St. Lawrence (1.4%) and Atlantic-Fundy (0.9%). Overall the study area is mostly subtidal, and the intertidal zone comprises only 3,271 km^2, which is 0.4% of the total area.

The coastline of the study area totals 50,624 km, of which 36,057 km (71.2%) is adjacent to Sheltered habitat, 7,470 km (14.8%) is adjacent to Semi-exposed habitat, and 7,098 km (14.0%) is adjacent to Exposed habitat (Table 6).

DEPTH CLASSIFICATION

Intertidal habitat amounts to 699 km^2 (5.9%) of the St. Lawrence estuary, 1,367 km^2 (0.6%) of the Gulf of St. Lawrence, 1,205 km^2 (0.2%) of Atlantic-Fundy, and 3,271 km^2 (0.4%) of the entire study area (Table 4). The portion of habitat that is intertidal is highest in the Sheltered zone followed by the Semi-exposed and Exposed zones (St. Lawrence Estuary: 20.6%, 14.3, 2.6%; Gulf of St. Lawrence: 23.1%, 6.2%, 0.2%; Atlantic-Fundy: 9.5%, 3.6%, 0.01%; all numbers given respectively).

Waters >10 m deep comprise the majority of the St. Lawrence Estuary (80.3%), the northern Gulf of St. Lawrence (97.6%), and the southern Gulf of St. Lawrence (92.3%) (Table 3). In the St. Lawrence Estuary, waters >10 deep are the leading depth category in all exposure zones (Sheltered 62.0%, Semi-exposed 47.6%, Exposed 91.2%). In the Northern Gulf, the leading depth categories are 0-2 m in the Sheltered zone (30.3%), >10 m in the Semi-exposed zone (74.1%), and >10 m in the Exposed zone (98.9%). In the Southern Gulf, the leading depth categories are 0-2 m in the Sheltered zone (50.23%), >10 m in the Semi-exposed zone (31.3%), and >10 m in the Exposed zone (95.9%).

Waters >10 m deep strongly dominated 50 km wide transects off Bonavista on the Newfoundland east coast (98.5%), Burgeo on the Newfoundland south coast (99.4%), and Liverpool on the Nova Scotia south shore (98.7%) (Table 7, Figs. 38-40). Waters >10 m deep were the leading depth category in each of the exposure zones of these transects, with the exception of the Sheltered zone in the Liverpool transect in which 40.8% of habitat had a depth of 0-2 m.

Profiles of water depths from the coastline to 10 km offshore at 36 locations in eastern Canada and St. Pierre and Miquelon (Fig. 41) are shown individually in Fig. 42 and plotted on a common axis in Fig. 43. The greatest maximum depths (>195 m) were found in profiles from the St. Lawrence Estuary, Atlantic-Newfoundland, and the Northern Gulf of St. Lawrence (Fig. 43). Profiles from the Southern Gulf of St. Lawrence were generally shallower than those of other regions. Southern Gulf profiles were limited to depths <35 m, except the Pointe-Saint-Pierre profile off the Gaspé Peninsula, which descended to 107 m near the edge of the Laurentian Channel.

DISTRIBUTION AND HARVEST RATE OF EEL FISHERIES

Eel fishery locations are mapped for the study area in Fig. 44, and by block in Figs. 45-62. Eel fisheries are unevenly distributed. Fishing locations are most concentrated in eastern New Brunswick and the north and east coasts of Prince Edward Island (Fig. 44). Fishing locations are dispersed on the Fundy coast of New Brunswick and on all coasts of Nova Scotia, including the brackish Bras d'Or Lakes. In Newfoundland, most fishing locations are on the east coast, and are scattered at wide intervals elsewhere. In addition to fishing locations shown in Figs. 45-62, logbook records also indicated eel fyke net fishing in Labrador in 2005 at 54.072°N, 58.202°W. There is currently no eel fishery on the French islands of St. Pierre and Miquelon. However, eels are present in substantial numbers in at least some watercourses, and in 1997 about 1.5-2.0 metric tonnes of eels were harvested (Gilly 2010; H. Goraguer, IFREMER, St. Pierre, pers. comm.). In the brackish and salt waters of Quebec, eel fisheries occur only in the St. Lawrence Estuary and Îles-de-la-Madeleine. There are no eel fisheries on the north shore of the Gulf of St. Lawrence, Anticosti Island, the Gaspé Peninsula, most of the Bay of Chaleur coast of New Brunswick, and in large stretches of the northeast, south, and west coasts of Newfoundland (Fig. 44).

In the St. Lawrence Estuary, migrating silver eels are fished by estuary traps (Figs. 45-46) (Verreault et al. 2003). Most eel fisheries elsewhere in the study area target yellow eels, although silver eels are also fished in freshwater in some rivers in Newfoundland, Nova Scotia, and New Brunswick, and in the brackish water of the lower Saint John River, New Brunswick. Elvers

are fished in Scotia-Fundy (Figs. 58-62). Elvers were also fished at five sites on the south coast of Newfoundland in 2008 (Fig. 57).

Commercial and recreational fisheries for yellow and silver eels occurred at 3,180 recorded locations in the study area (Table 8). Of these, 3,102 (97.5%) were in brackish and salt water and 78 (2.5%) were in fresh water. Within brackish and salt waters, most (2,911, 93.8%) fishing locations were in Sheltered waters, followed by Semi-exposed (185, 6.0%) and Exposed waters (6, 0.2%). Overall mean densities of fishing locations in the study area were 301.7, 7.9, and 0.0068 locations/1,000 km^2 in Sheltered, Semi-exposed, and Exposed waters, respectively (Tables 4 and 8). Mean densities of fishing locations in Sheltered waters were 38.0 times higher than those in Semi-exposed waters and 44,267 times higher than those in Exposed waters. The proportion of brackish and salt fishing locations that were in Sheltered waters was high in the Gulf of St. Lawrence (94.8%), the Newfoundland-Atlantic region (86.7%), and the Scotia-Fundy region (88.5%), but in the St. Lawrence Estuary most (82.6%) fishing locations were in Semi-Exposed waters. Reported elver fishing locations totalled 89 in 1996-1999 and 68 in 2000-2003 in Scotia-Fundy, and five in 2008 in Newfoundland.

Of the total surface of the study area (913,262 km^2), 851 km^2 (0.1%) is within 1 km and 7,586 km^2 (0.8%) is within 5 km of a commercial eel fishing location (Table 9). Waters within 1 and within 5 km of commercial eel fishing locations are 6.4% and 23.9% of the Sheltered zone, 0.7% and 10.9% of the Semi-exposed zone, and 0.01% and 0.3% of the Exposed zone (percentages given respectively). The percentage of Sheltered waters that are within 1 km of eel fishing locations is highest in the southern Gulf of St. Lawrence (Gulf New Brunswick 37.8%, Gulf Nova Scotia mainland 31.5%, Gulf Cape Breton 27.8%, Prince Edward Island 39.2%). Outside the southern Gulf of St. Lawrence, waters within 1 km of an eel fishing location never exceeded 10.1% of any exposure zone of any sector.

Mean annual yellow and silver eel landings for the Gulf of St. Lawrence and Atlantic-Fundy in 2000-2009 were 339.8 t, of which 258.4 were estimated to occur in the Sheltered zone (Tables 10 and 11). Total area of the Sheltered zone, calculated as (intertidal area/2) + subtidal area, was 8,581 km^2. Table 11 tabulates and Figs. 47-62 plot harvest rates (yellow and silver eels harvested/km^2 of Sheltered waters/yr) by sector (Quebec), by county (Maritime Provinces), and by Statistical District (Newfoundland). The overall mean harvest rate in Sheltered waters of the Gulf of St. Lawrence and Atlantic-Fundy 30.1 kg/km^2/yr. The region with the highest harvest rates was Gulf Maritimes. Harvest rates were 171.3-337.5 kg/km^2/yr in eastern New Brunswick counties, 67.7-140.3 kg/km^2/yr in the eastern part of Gulf Nova Scotia, and 102.8-325.9 kg/km^2/yr in the west, north, and east shores of Prince Edward Island. Harvest rates were also substantial (>50 kg/km^2/yr) in three of four Statistical Districts on Newfoundland's west coast. Harvest rates were nil in the Quebec portion of the Gulf of St. Lawrence except Îles-de-la-Madeleine (31.9 kg/km^2/yr). In Atlantic-Fundy, Newfoundland Statistical District E (Conception Bay); Queens County, Nova Scotia; and Cumberland County-Fundy, Nova Scotia, had harvest rates >50 kg/km^2/yr. Harvest rates elsewhere in Atlantic-Fundy were nil or low.

For the Gulf of St. Lawrence and Atlantic-Fundy as a whole, 21.8% of Sheltered waters had a harvest rate of 0 kg/km^2/yr, 40.4% had a harvest rate of 0.1-9.9 kg/km^2/yr, and 10.5% had a harvest rate 100-350 kg/km^2/yr (Table 12). In Gulf Maritimes, 77.7% of Sheltered waters had harvest rates of 100-350 kg/km^2/yr. On the west coast of Newfoundland and Atlantic-Fundy, most Sheltered waters had harvest rates >0.1 and < 100 kg/km^2/yr.

Fig. 63 shows locations of research eel fishing in brackish and salt waters of the Gulf North Shore, Anticosti Island, the Gaspé Peninsula, and the southwest corner of Newfoundland. These locations are not subject to commercial eel fisheries. The research fisheries commonly found eels at all of these locations.

DISCUSSION

ATLAS DESIGN AND APPROACH

Wave height and wave energy are key characteristics of aquatic environments. Wave regimes can be characterized by physical oceanographic models that draw on coastline geometry and bathymetric profiles, as well as on patterns of wind velocity, direction and fetch (Panchang et al. 2000). Construction of such models is data- and labour-intensive, and it would take a very large amount of resources to apply them over a broad geographic area. We therefore sought a method that would approximately indicate exposure to marine waves that could be implemented with modest labour requirements, using a data source that is available for the entire east coast of North America. We chose the circle method because its sole data source is coastlines as depicted on topographic maps, and because it can be readily applied with GIS software. We also considered it essential that the method be reproducible. Habitat inventories commonly classify by qualitative types such as wetland, estuary, and reef (Finlayson and Spiers 1999). We avoided classifying by such terms because of the difficulty in formulating reproducible criteria that would allow different classifiers to consistently reach the same results.

This atlas classifies all waters of the east coast of Canada by exposure zone. We also classified waters of the St. Lawrence Estuary and Gulf by depth. We did not comprehensively classify Atlantic-Fundy waters by depth because of the unavailability of a verified soundings database. The method of visual tracing of rasterized nautical charts, used in three 50 km-wide transects on the Atlantic coast, was very labour-intensive, and our resources were insufficient to extend this technique to the remainder of the Atlantic-Fundy region.

Resuspension of unconsolidated substrate particles increases with increasing water velocity and decreasing grain size (Bloesch 1995). This leads to a sorting of bottom sediments, with small particles (mud, silt) being found in sheltered areas that have slow water movement and larger particles (sand and larger) being found in exposed areas subject to more rapid water movement (Keddy 1982). Kostylev and Hannah (2007) and Fisher et al. (2011) have classified and mapped Atlantic waters off Nova Scotia on the basis of "scope for growth," and "natural disturbance." "Scope for growth" is the energy available for growth and reproduction, which is related to primary productivity. "Natural disturbance" is related to the velocity of water movements along the seafloor. Kostylev and Hannah (2007) and Fisher et al. (2011) used survey data on substrate particle size in their mapping of "natural disturbance." Particle size categories (e.g. mud, sand) are commonly recorded in bathymetric charts. Given the relation between substrate particle size and exposure (Keddy 1982), there is potential for particle size data to be used as a proxy for exposure in mapping of bay and estuary habitat mapping. American eels prefer to occupy substrates with small (mud) or large (cobble) particles; intermediate (sand and gravel) sizes are shunned (Tomie 2011). Broad-scale mapping of aquatic habitat by particle size might provide more detailed identification of potential American eel habitat than maps based only on exposure and depth.

Classification schemes for shoreline type (e.g. cliff, sand beach, salt marsh) have also been implemented in the Maritime Provinces (Owens and Bowen 1977) and eastern Newfoundland (Catto et al. 2003). These reports give qualitative data on wave and exposure regimes, and on substrate types in the intertidal zone, which is commonly used by eels for foraging at high tide (J. Hallett, D. Cairns, and S. Courtenay, unpubl.).

EEL MOVEMENTS AND THE AREA AFFECTED BY FISHERIES

We wanted to identify the portion of brackish and salt waters that may be affected by eel fisheries, to help clarify the relation between eel distribution and exposure zones and to shed light on the possible impacts of fisheries on eel resources. The area affected by an eel fishery depends on eel movement patterns. Some eels are resident within home ranges during their yellow phase, while others move irregularly or seasonally between habitats (Feunteun et al. 2003, Jessop et al. 2008). Nilo and Fortin (2001), Morrison and Secor (2003), and Greene et al. (2009) reviewed data on eel home ranges and movement patterns from 12 studies. Home ranges and maximum linear displacements varied greatly. Reported home range areas varied from 0.11 ha to 65.4 ha. A home range of 65.4 ha that is round would have a diameter of 0.91 km. However, eel habitat is commonly constrained by irregular shorelines or within narrow rivers or estuaries. Hence the greatest distance between points in a home range of 65.4 ha is often much more than 0.91 km. In the reviews cited above, maximum linear displacements ranged from 0.05 km to 16 km. Tagging studies in freshwater coastal ponds in Prince Edward Island showed a maximum displacement of 0.35 km (D. Cairns unpubl.). In contrast, Hedger et al. (2010) reported daily movements of eels in the York River system in the Gaspé Peninsula of 0.75 to 4 km, and seasonal movements of ca. 20 km. There is clearly no single or consistent distance from a fishing location that defines the area likely to be affected by fishing. We used circles 2 km in diameter centred on fishing locations to approximate the area that may be affected by eel fisheries. A 2 km circle is larger than all of the home range reports compiled above, and 2 km is greater than four of the nine maximum linear displacements reported in the sources cited above. Additional circles, 10 km in diameter, were also drawn. Eel home ranges would fall within such circles with a high degree of probability.

HABITAT OCCUPIED BY YELLOW EELS

Yellow American eels occupy both fresh and saline continental waters. The trap net fishery of the St. Lawrence Estuary targets silver eels, and silver eels comprise a substantial portion of the eel catch in the brackish portion of the lower Saint John River (R. Bradford, Dept. Fisheries and Oceans, pers. comm.). Other fisheries in the brackish and salt waters of Canada's east coast target yellow eels. Records of fishing locations are a geographically widespread source of information on eel occurrence, because if eels were not present in at least moderate abundance, fisheries would not exist. Fishery locations confirm that American eels commonly occupy Sheltered habitats in many parts of the east coast of Canada, particularly in the southern Gulf of St. Lawrence and some parts of Newfoundland and Scotia-Fundy (Fig. 44). The largest area on the east coast of Canada that is unfished for eels is the Quebec portion of the Northern Gulf of St. Lawrence. Lemire et al. (1978) and Pilote (1989) conducted exploratory eel fisheries at numerous sites on the north shore of the St. Lawrence Estuary and Gulf (Fig. 63). Eels were commonly found in all study sites. Research fishing has also found eels to be common at sites in the St.

Lawrence Estuary (Dutil et al. 1988), Anticosti Island (Caron and Raymond 1997), the eastern Gaspé Peninsula (Caron et al. 2009, Hedger et al. 2010), western Newfoundland (Brennan 1976), and the south coast of Newfoundland (Mullins 1980). Taken together, locations of commercial fishing (Fig. 44), and findings of research and exploratory fishing (Fig. 63), suggest that eels commonly inhabit Sheltered waters throughout the study area.

In the southern Gulf of St. Lawrence, a high proportion of Sheltered waters are shallow (89.0% <4 m, Table 3). Shallow waters are a lower portion of the Sheltered zone in the Northern Gulf (55.5% <4 m). The varying proportion of shallow waters in the Sheltered zone prompts the question of whether eels are likely to occupy all the Sheltered zone, or only the shallow portions. Most research, exploratory, and commercial fishing for yellow eels is conducted in shallow water. The dominant gear in these fisheries is fyke nets, which are typically set in shallow water with the leader running to shore. Eel densities in southern Gulf of St. Lawrence bays and estuaries estimated from night-time glass bottom boat surveys fluctuated without trend between 0 m depth and 3 m depth (J. Hallett, D. Cairns, and S. Courtenay, unpubl.) (Fig. 64). Eels were also visible from a glass bottom boat in the Margaree River Estuary, Cape Breton Island, at the maximum depth at which the bottom could be clearly seen (~4 m; J. Hallett, D. Cairns, and S. Courtenay, unpubl.). Rustico Bay, Prince Edward Island, contains a narrow trench 6-8 m deep that is surrounded by water that is mostly <4 m deep (Fig. 22). Data from depth-sensing acoustic tags indicated that eels mostly used waters <3 m deep, with only one individual descending below 5 m (J. Hallett, J. Tomie, D. Cairns, and S. Courtenay, unpubl.). In the York River Estuary in the Gaspé Peninsula, detection locations of acoustically tagged eels had a mean depth of 4.3 m at night and 7.4 m in the day (Hedger et al. 2010). Abundance-depth curves for American and European eels show highly variable patterns (Fig. 64). In two Irish lakes, eel abundance increased strongly to the maximum sampled depth (Lough Allen, maximum sampled depth 17 m, McCarthy et al. 1999; Lough Ennell, maximum sampled depth 25 m, Yokouchi et al. 2009). In contrast, densities in a German reservoir decreased strongly to the maximum sampled depth of 15 m (Schulze et al. 2004). Trawl catch rates in Chesapeake Bay peaked between 4 and 10 m depth, but eels were present to the maximum sampled depth of 34 m (Geer 2003). These findings indicate that yellow eels commonly exhibit strong depth preferences but such preferences are highly variable among sites.

Of the 9,648 km^2 of Sheltered habitat in the study area, 1,383 km^2 (14.3%) is intertidal (Table 4). Intertidal habitat may have a substantial role in eel production. In the southern Gulf of St. Lawrence, eels were commonly observed during night-time glass bottom boat surveys in the intertidal zone during mid and high tides (J. Hallett and D. Cairns, unpubl. observations). Intertidal habitat may be particularly important in Gulf Maritimes, where 355 km^2 (28.6%) of this region's 1,240 km^2 of Sheltered habitat are intertidal (Table 4). Gulf Maritimes is the site of Canada's largest eel fishery, and the main fishing gear is fyke nets which are typically set with the leaders in the intertidal zone.

Eels may also use marshes at the upper edge of the intertidal zone. In the Kamouraska area of the St. Lawrence middle estuary, Dutil et al. (1982) and Dutil and Fortin (1983) caught low numbers of eels in intertidal marshlands. These authors observed eels entering marsh pools in the *Spartina* zone at night, presumably for feeding (J.D. Dutil, unpubl. observations). On Prince Edward Island, Cairns et al. (2007) found eels in salt marsh creeks, but not in marsh pools. Marshland with emergent vegetation is considered land in the topographic series upon which the atlas base map is based. Marshes are therefore not included in the habitats considered in this atlas, although tidal marsh creeks may be included.

Table 13 compiles data from fisheries surveys on the east coast of Canada. Despite very large effort (>60,000 sets), surveys generally reported few or no American eel captures. A trawl survey in the St. Lawrence estuary between Île d'Orléans and Île-aux-Oies reported 10 eels (Caron et al. 2001, Fournier 2002). However, the timing of captures suggests that these eels may have been migrating silver eels, rather than resident yellow eels. A review of records from commercial and research fisheries in the lower St. Lawrence Estuary between 1930 and 2005 indicated that eels were caught only rarely (Scallon-Chouinard et. al 2007). The southern Gulf of St. Lawrence trawl survey recorded one eel at the edge of the Laurentian Channel; this may have been a migrating silver eel. Bottom trawl surveys in the Scotian Shelf recorded two eels, which may have been migrating silvers (Bradford 2010). Bottom trawl surveys recorded two eels in the northern Gulf of St. Lawrence, with both captures occurring during July. Six eels were reported from unmodified lobster traps on the Atlantic coast of Nova Scotia (den Hayer 2007, A. Bundy, DFO, pers. comm.). Beam trawl surveys in the St. Lawrence Estuary, bottom trawl surveys in Newfoundland and Labrador waters, and multi-gear surveys on the Atlantic coast of Nova Scotia, recorded no eels (Table 13).

Like American eels, European eels are common estuarine residents (Nicolas et al. 2010). However, in contrast to the rarity of American eels in trawl surveys off eastern Canada, European eels were abundantly taken in similar gear in the North Sea in the recent past (ICES 2009). Eels (primarily yellow) were

commercially trawled in the southeastern North Sea in waters of ca. 10-50 m depth from 1964 to the 1980s, with annual landings up to 300 tonnes. Trawl surveys in the southern North Sea reveal eel presence to about 20 km from the coast, with abundance diminishing with distance from shore (ICES 2009). These records confirm that yellow eels can inhabit open marine waters to depths of at least 50 m. They also demonstrate (as do the data of Geer 2003) that eels are vulnerable to capture by trawling. This suggests that their rarity in eastern Canadian trawl surveys is not an artefact of gear selectivity.

Most of the data series listed in Table 13 are in the Exposed water category. The rarity of American eels in these data sets indicates that the area occupied by yellow eels in the study area does not regularly include Exposed waters.

Only 5.4% of fishing locations in Gulf of St. Lawrence and Atlantic-Fundy brackish and salt waters are in Semi-exposed waters (Table 8), although Semi-exposed waters are more abundant than Sheltered waters (20,616 km^2 vs. 9,229 km^2, Table 4). This indicates that yellow eels occupy at least some parts of the Semi-exposed zone. Some of the survey series compiled in Table 13 covered at least parts of the Semi-exposed zone, particularly in the St. Lawrence Estuary. However the degree to which these survey series covered Semi-exposed waters has not yet been quantified. We suggest that Sheltered waters as defined in this atlas are the best current approximation of brackish and salt habitat used by yellow eels on the east coast of Canada. Such waters include 9,626 km^2 in Canadian waters and 21.8 km^2 in the French waters of St. Pierre and Miquelon (Table 4).

American eels traverse ocean waters during their migrations from and to their spawning ground in the Sargasso Sea. Glass eels enter the Gulf of St. Lawrence through the Cabot Strait (Dutil et al. 2009a), but it is not known if the Strait of Belle Isle is also a migration corridor. All coastal and offshore waters are likely crossed by at least some migrating eels. We therefore suggest that the entire study area be included in the area occupied by American eels during oceanic migrations. This area includes 903,680 km^2 in Canadian waters and 9,582 km^2 in the French waters of St. Pierre and Miquelon (Table 4).

The area treated in this Atlas extends only to the Strait of Belle Isle. Sporadic records also indicate that eels are present in low abundance in southern Labrador (Fletcher and Anderson 1973, COSEWIC 2006, Cairns et al. 2008, Veinott and Clarke 2010). The American eel has also been recorded still further north in Greenland and Iceland (Boetius 1985, Albert et al. 2006).

OTHER ATLAS APPLICATIONS

The creation of this atlas was prompted by the conservation needs of the American eel. However, atlas products may be useful for a wide variety of other purposes. The files posted in online archives (see Appendix A) includes high resolution (1:50,000) polygon and polyline maps of the east coast of Canada, which could serve as base maps for other studies. Many economically important bivalve molluscs are largely or exclusively confined to sheltered marine waters (Ren et al. 2010), and the exposure classification system developed in this atlas may offer a preliminary quantification of habitat available for these species. With rising sea levels, coastal erosion poses an increasing threat to shorelines in eastern North America (Boruff et al. 2005, Webster et al. 2006). The Atlas classifies the 50,624 km of coastline in eastern Canada and St. Pierre and Miquelon as Sheltered, Semi-exposed, and Exposed, with 7,098 km classified as Exposed (14.0% of total) (Table 6). This classification scheme may aid in assessments of vulnerability to wave-driven coastal erosion in eastern Canada and St. Pierre and Miquelon.

FURTHER STEPS

This atlas provides full coverage of the east coast of Canada only for exposure classification. It would be useful to extend depth classification to the full study area. Temperature has a vital influence on living marine resources. Temperature regimes could be mapped and classified from satellite-based estimates of sea surface temperature, which are available for all world oceans.

The American eel exists as a single panmictic stock in the west Atlantic (Wirth and Bernatchez 2003, Gagnaire et al. 2012), and its major growth habitat includes both Canadian and U.S. waters. For a mapping and classification scheme to achieve full benefits to eel conservation, coverage should be extended to waters of the US east coast.

This atlas has established that yellow American eels are widely present in the Sheltered zone of the east coast of Canada, but virtually absent in the Exposed zone. The abundance and distribution of eels in the Semi-exposed zone remains uncertain. Eel status in that zone could be clarified, at least in part, by further examination of commercial and research fishery records on the east coasts of Canada and the US.

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Table 1. List of geographic sectors.

Province/territory	Sector	Notes on sector boundaries
St. Lawrence Estuary		
Quebec	St. Lawrence Middle Estuary	From a line running east-west through the midpoint of Île-aux-Grues, to a line between Pointe-aux-Alouettes and the southwest tip of Notre-Dame-de-Isle-Verte, continued to the south shore of the estuary.
Quebec	Saguenay Fiord	Includes the Baie du Tadoussac, bounded by a line from Pointe-aux-Alouettes to the northwest tip of Îlet-aux-Alouettes, thence on to Pointe-aux-Vaches.
Quebec	St. Lawrence Lower Estuary	From a line between Pointe-aux-Alouettes and the southwest tip of Notre-Dame-de-Isle-Verte, continued to the south shore of the estuary, and a line from Pointe-des-Monts south to the south shore of the estuary. Excludes Baie de Tadoussac.
Gulf of St. Lawrence[a,b]		
Quebec	Gulf North Shore	From Pointe-des-Monts to the Quebec-Labrador border
Quebec	Anticosti	
Quebec	Gaspé	From the south shore of the St. Lawrence estuary south of Pointe-des-Monts, to the Quebec-New Brunswick border
Quebec	Îles-de-la-Madeleine	
New Brunswick	Gulf New Brunswick	From the Quebec-New Brunswick border to the New Brunswick-Nova Scotia border
Nova Scotia	Gulf Nova Scotia mainland	From the New Brunswick-Nova Scotia border to the Canso Causeway
Nova Scotia	Gulf Cape Breton	From the Canso Causeway to the border between Inverness and Victoria Counties. Includes the west side of St. Paul Island.
Prince Edward Island	Prince Edward Island	
Newfoundand and Labrador	Newfoundland West Coast	From Cape Ray to Anchor Point
Atlantic Ocean and Bay of Fundy[c]		
Newfoundand and Labrador	Newfoundland Strait of Belle Isle	From Anchor Point to Cape Bauld. The seaward boundary is the line of equidistance between Newfoundland, and Labrador and Belle Isle.
Newfoundand and Labrador	Newfoundland Northeast Coast	From Cape Bauld to to Cape Freels.
Newfoundand and Labrador	Newfoundland East Coast	From Cape Freels to Cape Race. Does not include the Flemish Cap.
Newfoundand and Labrador	Newfoundland South Coast	From Cape Race to Cape Ray. Excludes the St. Pierre and Miquelon Sector.
St. Pierre and Miquelon	St. Pierre and Miquelon	Waters inside the Canada-France boundary, as shown on Canadian Hydrographic Service Nautical Charts 4015 and 4047.
Nova Scotia	Atlantic Cape Breton	From the border between Inverness and Victoria Counties to the Canso Causeway. Includes the east side of St. Paul Island.
Nova Scotia	Bras d'Or Lakes	Includes all waters inland of Big Bras d'Or
Nova Scotia	Nova Scotia Eastern Shore	From the Canso Causeway to Chebucto Head. Includes Sable Island.
Nova Scotia	Nova Scotia South Shore	From Chebucto Head to Cape Sable
Nova Scotia	Nova Scotia Gulf of Maine	From Cape Sable to Whipple Point. The seaward boundary is the Canada-US boundary as shown on Canadian Hydrograhic Service Nautical Chart 4011.
Nova Scotia	Nova Scotia Bay of Fundy	From Whipple Point to the Nova Scotia-New Brunswick border. The seaward boundary on the west side is the Canada-US boundary as shown on Canadian Hydrographic Service Nautical Chart 4011.
New Brunswick	New Brunswick Bay of Fundy	From the Nova Scotia-New Brunswick border to the New-Brunswick-US border. The seaward boundary on the west side is the Canada-US boundary as shown on Canadian Hydrographic Service Nautical Chart 4011.

[a]Seaward boundaries are the lines of equidistance between land masses

[b]The Gulf of St. Lawrence is further divided into the Northern Gulf and the Southern Gulf, whose boundary runs from Cap Gaspé along the 200 m isobath on the south side of the Laurentian Channel to Cabot Strait.

[c]Seaward boundaries are the 500 m isobath, except where noted

Table 2. Area of aquatic habitat in the St. Lawrence Estuary and Gulf by exposure category and depth zone. See Fig. 1 for sector boundaries. Semi-exposed water bodies are defined using Method 1 (see Methods).

Prov. Sector	Area (km^2)															
	Sheltered								Semi-exposed							
	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total
St. Lawrence Estuary																
QC St. Law. Middle Est.	24.0	3.3	0.5	0.5	1.4	0.3	0.2	30.3	233.0	217.2	119.6	120.3	217.4	228.6	1,221.8	2,357.9
Percent of total	0.9	0.1	0.0	0.0	0.1	0.0	0.0	1.2	9.1	8.5	4.7	4.7	8.5	8.9	47.7	92.0
QC Saguenay Fiord	6.7	26.2	3.8	0.5	3.6	5.5	258.3	304.5	1.4	0.5	0.1	0.0	0.1	0.1	5.7	7.8
Percent of total	2.1	8.3	1.2	0.1	1.1	1.8	81.9	96.5	0.4	0.2	0.0	0.0	0.0	0.0	1.8	2.5
QC St. Law. Lower Est.	55.8	24.8	0.8	0.5	0.4	0.8	1.3	84.4	179.9	88.3	17.7	13.1	17.6	14.6	74.8	406.0
Percent of total	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.9	2.0	1.0	0.2	0.1	0.2	0.2	0.8	4.5
Gulf of St. Lawrence																
QC Gulf North Shore	246.2	396.2	49.2	43.9	75.4	121.8	384.2	1,317.0	108.3	68.9	27.4	28.3	62.7	119.6	948.0	1,363.2
Percent of total	0.5	0.9	0.1	0.1	0.2	0.3	0.8	2.8	0.2	0.1	0.1	0.1	0.1	0.3	2.0	2.9
QC Gaspé	39.1	25.9	1.3	1.2	2.7	3.5	16.0	89.8	26.9	69.2	18.0	14.9	28.1	43.9	356.2	557.2
Percent of total	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.3	0.1	0.1	0.1	0.2	1.6	2.6
QC Anticosti	7.7	3.4	0.2	0.2	0.1	0.0	0.0	11.5	17.0	19.5	6.0	5.5	10.8	14.7	30.0	103.6
Percent of total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.3
QC Îles-de-la-Madeleine	25.3	81.9	7.0	7.8	12.0	4.0	0.0	138.0	6.6	13.1	8.4	9.6	26.6	72.9	102.7	239.9
Percent of total	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.8
NB Gulf NB	85.4	339.5	11.4	7.4	10.5	5.2	0.4	459.7	87.7	247.3	90.8	93.2	194.4	99.1	73.8	886.3
Percent of total	0.6	2.4	0.1	0.1	0.1	0.0	0.0	3.2	0.6	1.7	0.6	0.7	1.4	0.7	0.5	6.2
NS Gulf NS mainland	73.7	85.4	12.2	6.1	4.8	3.6	2.3	188.2	32.3	40.0	21.1	26.4	55.2	109.8	59.3	344.0
Percent of total	1.8	2.1	0.3	0.1	0.1	0.1	0.1	4.6	0.8	1.0	0.5	0.6	1.3	2.7	1.4	8.3
NS Gulf Cape Breton	1.4	16.8	1.6	1.3	1.4	0.9	1.5	24.9	1.4	12.1	5.0	5.3	10.8	22.1	79.0	135.7
Percent of total	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.2	0.7	1.3
PEI PEI	194.7	186.9	46.9	46.2	54.5	32.0	6.1	567.3	86.7	86.4	35.8	38.8	74.4	87.3	99.5	509.1
Percent of total	0.9	0.8	0.2	0.2	0.2	0.1	0.0	2.5	0.4	0.4	0.2	0.2	0.3	0.4	0.4	2.2
NL Nfld West Coast	38.5	90.9	13.6	6.9	16.8	27.3	97.3	291.2	22.9	80.9	28.7	29.6	61.9	138.7	1,013.1	1,375.8
Percent of total	0.1	0.3	0.0	0.0	0.0	0.1	0.3	0.8	0.1	0.2	0.1	0.1	0.2	0.4	2.8	3.8
Totals by region and province																
St. Law. Estuary	86.4	54.2	5.0	1.4	5.5	6.7	259.9	419.1	414.3	306.0	137.3	133.4	235.1	243.3	1,302.3	2,771.7
Percent of total	0.7	0.5	0.0	0.0	0.0	0.1	2.2	3.5	3.5	2.6	1.2	1.1	2.0	2.1	11.0	23.4
Gulf of St. Lawrence	712.0	1,226.8	143.5	121.0	178.2	198.3	507.8	3,087.6	389.8	637.4	241.2	251.7	525.0	708.1	2,761.6	5,514.9
Percent of total	0.3	0.6	0.1	0.1	0.1	0.1	0.2	1.4	0.2	0.3	0.1	0.1	0.2	0.3	1.3	2.5
St. Law. Est. and Gulf	798.4	1,281.1	148.5	122.4	183.7	205.0	767.6	3,506.7	804.2	943.4	378.6	385.1	760.1	951.4	4,063.9	8,286.6
Percent of total	0.3	0.6	0.1	0.1	0.1	0.1	0.3	1.5	0.3	0.4	0.2	0.2	0.3	0.4	1.8	3.6
Northern Gulf	294.0	492.3	63.3	51.1	92.7	149.4	481.5	1,624.3	150.5	172.4	63.3	64.5	137.4	275.8	1,993.0	2,857.0
Percent of total	0.2	0.4	0.0	0.0	0.1	0.1	0.4	1.2	0.1	0.1	0.0	0.0	0.1	0.2	1.5	2.1
Southern Gulf	418.1	734.6	80.1	69.8	85.5	49.0	26.3	1,463.3	239.3	464.9	178.0	187.2	387.6	432.3	768.6	2,657.9
Percent of total	0.5	0.9	0.1	0.1	0.1	0.1	0.0	1.8	0.3	0.6	0.2	0.2	0.5	0.5	0.9	3.2
Quebec-Gulf	318.4	507.4	57.7	53.1	90.2	129.3	400.2	1,556.3	158.9	170.6	59.7	58.4	128.2	251.1	1,436.9	2,263.9
Percent of total	0.2	0.4	0.0	0.0	0.1	0.1	0.3	1.2	0.1	0.1	0.0	0.0	0.1	0.2	1.1	1.7
Quebec-total	404.8	561.7	62.7	54.5	95.7	136.0	660.1	1,975.4	573.2	476.6	197.1	191.8	363.3	494.4	2,739.2	5,035.6
Percent of total	0.3	0.4	0.0	0.0	0.1	0.1	0.5	1.4	0.4	0.3	0.1	0.1	0.3	0.3	1.9	3.5
New Brunswick-Gulf	85.4	339.5	11.4	7.4	10.5	5.2	0.4	459.7	87.7	247.3	90.8	93.2	194.4	99.1	73.8	886.3
Percent of total	0.6	2.4	0.1	0.1	0.1	0.0	0.0	3.2	0.6	1.7	0.6	0.7	1.4	0.7	0.5	6.2
Nova Scotia-Gulf	75.1	102.2	13.9	7.4	6.2	4.5	3.8	213.1	33.7	52.1	26.2	31.7	66.0	131.8	138.2	479.8
Percent of total	0.5	0.7	0.1	0.1	0.0	0.0	0.0	1.4	0.2	0.4	0.2	0.2	0.4	0.9	0.9	3.2
Prince Edward Island	194.7	186.9	46.9	46.2	54.5	32.0	6.1	567.3	86.7	86.4	35.8	38.8	74.4	87.3	99.5	509.1
Percent of total	0.9	0.8	0.2	0.2	0.2	0.1	0.0	2.5	0.4	0.4	0.2	0.2	0.3	0.4	0.4	2.2
Maritime Provinces-Gulf	355.2	628.5	72.1	61.0	71.2	41.7	10.3	1,240.1	208.1	385.9	152.8	163.7	334.9	318.2	311.5	1,875.1
Percent of total	0.7	1.2	0.1	0.1	0.1	0.1	0.0	2.4	0.4	0.7	0.3	0.3	0.6	0.6	0.6	3.6
Newfoundland-Gulf	38.5	90.9	13.6	6.9	16.8	27.3	97.3	291.2	22.9	80.9	28.7	29.6	61.9	138.7	1,013.1	1,375.8
Percent of total	0.1	0.3	0.0	0.0	0.0	0.1	0.3	0.8	0.1	0.2	0.1	0.1	0.2	0.4	2.8	3.8

Table 2 (continued)

Prov. Sector	Area (km^2)															
	Exposed								Total							
	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total
St. Lawrence Estuary																
QC St. Law. Middle Est.	14.4	12.6	2.5	2.2	2.6	3.7	135.7	173.8	271.4	233.1	122.6	122.9	221.5	232.6	1,357.7	2,561.9
Percent of total	0.6	0.5	0.1	0.1	0.1	0.1	5.3	6.8	10.6	9.1	4.8	4.8	8.6	9.1	53.0	100.0
QC Saguenay Fiord	0.2	0.3	0.0	0.0	0.1	0.2	2.3	3.2	8.2	27.0	3.9	0.5	3.8	5.8	266.3	315.6
Percent of total	0.1	0.1	0.0	0.0	0.0	0.1	0.7	1.0	2.6	8.5	1.2	0.2	1.2	1.9	84.4	100.0
QC St. Law. Lower Est.	183.9	114.9	48.5	48.0	100.6	170.1	7,803.3	8,469.3	419.6	228.0	66.9	61.6	118.6	185.5	7,879.5	8,959.7
Percent of total	2.1	1.3	0.5	0.5	1.1	1.9	87.1	94.5	4.7	2.5	0.7	0.7	1.3	2.1	87.9	100.0
Gulf of St. Lawrence																
QC Gulf North Shore	30.9	81.5	35.1	36.9	77.4	198.9	43,118.3	43,578.9	385.5	546.6	111.7	109.1	215.4	440.4	44,450.4	46,259.1
Percent of total	0.1	0.2	0.1	0.1	0.2	0.4	93.2	94.2	0.8	1.2	0.2	0.2	0.5	1.0	96.1	100.0
QC Gaspé	22.7	47.0	17.8	17.5	38.8	91.4	20,923.1	21,158.4	88.7	142.1	37.1	33.7	69.7	138.8	21,295.3	21,805.4
Percent of total	0.1	0.2	0.1	0.1	0.2	0.4	96.0	97.0	0.4	0.7	0.2	0.2	0.3	0.6	97.7	100.0
QC Anticosti	93.9	70.6	30.2	31.4	68.1	147.6	33,472.9	33,914.5	118.6	93.4	36.3	37.1	79.0	162.3	33,502.9	34,029.6
Percent of total	0.3	0.2	0.1	0.1	0.2	0.4	98.4	99.7	0.3	0.3	0.1	0.1	0.2	0.5	98.5	100.0
QC Îles-de-la-Madeleine	9.2	13.3	10.5	12.5	34.1	115.4	28,803.6	28,998.6	41.2	108.3	25.9	30.0	72.7	192.3	28,906.3	29,376.6
Percent of total	0.0	0.0	0.0	0.0	0.1	0.4	98.0	98.7	0.1	0.4	0.1	0.1	0.2	0.7	98.4	100.0
NB Gulf NB	24.7	121.9	67.6	74.4	250.8	809.4	11,560.7	12,909.5	197.8	708.7	169.8	175.0	455.7	913.6	11,634.9	14,255.5
Percent of total	0.2	0.9	0.5	0.5	1.8	5.7	81.1	90.6	1.4	5.0	1.2	1.2	3.2	6.4	81.6	100.0
NS Gulf NS mainland	8.2	26.1	13.1	18.2	50.9	179.4	3,303.8	3,599.6	114.2	151.5	46.5	50.7	110.9	292.8	3,365.4	4,131.8
Percent of total	0.2	0.6	0.3	0.4	1.2	4.3	80.0	87.1	2.8	3.7	1.1	1.2	2.7	7.1	81.5	100.0
NS Gulf Cape Breton	0.7	10.4	4.3	5.1	13.5	38.0	10,411.3	10,483.1	3.6	39.3	11.0	11.7	25.7	60.9	10,491.7	10,643.8
Percent of total	0.0	0.1	0.0	0.0	0.1	0.4	97.8	98.5	0.0	0.4	0.1	0.1	0.2	0.6	98.6	100.0
PEI PEI	64.2	107.2	64.8	79.9	192.7	486.0	20,595.9	21,590.7	345.6	380.6	147.5	164.9	321.7	605.3	20,701.5	22,667.0
Percent of total	0.3	0.5	0.3	0.4	0.9	2.1	90.9	95.3	1.5	1.7	0.7	0.7	1.4	2.7	91.3	100.0
NL Nfld West Coast	10.6	48.3	20.4	20.6	41.4	99.7	34,413.5	34,654.4	71.9	220.1	62.7	57.0	120.1	265.8	35,523.9	36,321.5
Percent of total	0.0	0.1	0.1	0.1	0.1	0.3	94.7	95.4	0.2	0.6	0.2	0.2	0.3	0.7	97.8	100.0
Totals by region and province																
St. Law. Estuary	198.5	127.9	51.0	50.2	103.4	174.0	7,941.4	8,646.3	699.2	488.1	193.4	185.0	344.0	424.0	9,503.5	11,837.1
Percent of total	1.7	1.1	0.4	0.4	0.9	1.5	67.1	73.0	5.9	4.1	1.6	1.6	2.9	3.6	80.3	100.0
Gulf of St. Lawrence	265.1	526.3	263.7	296.4	767.7	2,165.8	206,603.0	210,887.9	1,367.0	2,390.5	648.4	669.0	1,470.9	3,072.2	209,872.3	219,490.3
Percent of total	0.1	0.2	0.1	0.1	0.3	1.0	94.1	96.1	0.6	1.1	0.3	0.3	0.7	1.4	95.6	100.0
St. Law. Est. and Gulf	463.6	654.2	314.8	346.6	871.1	2,339.8	214,544.3	219,534.2	2,066.2	2,878.6	841.8	854.0	1,814.8	3,496.2	219,375.8	231,327.5
Percent of total	0.2	0.3	0.1	0.1	0.4	1.0	92.7	94.9	0.9	1.2	0.4	0.4	0.8	1.5	94.8	100.0
Northern Gulf	156.5	220.0	93.3	96.4	202.6	483.4	130,939.2	132,191.4	601.1	884.7	219.9	212.0	432.7	908.7	133,413.6	136,672.7
Percent of total	0.1	0.2	0.1	0.1	0.1	0.4	95.8	96.7	0.4	0.6	0.2	0.2	0.3	0.7	97.6	100.0
Southern Gulf	108.6	306.3	170.5	200.0	565.0	1,682.4	75,663.8	78,696.5	765.9	1,505.8	428.5	457.0	1,038.2	2,163.6	76,458.7	82,817.6
Percent of total	0.1	0.4	0.2	0.2	0.7	2.0	91.4	95.0	0.9	1.8	0.5	0.6	1.3	2.6	92.3	100.0
Quebec-Gulf	156.7	212.3	93.5	98.3	218.4	553.3	126,317.9	127,650.5	634.0	890.4	211.0	209.8	436.8	933.8	128,155.0	131,470.7
Percent of total	0.1	0.2	0.1	0.1	0.2	0.4	96.1	97.1	0.5	0.7	0.2	0.2	0.3	0.7	97.5	100.0
Quebec-total	355.2	340.2	144.6	148.5	321.8	727.3	134,259.2	136,296.8	1,333.2	1,378.5	404.3	394.8	780.7	1,357.8	137,658.5	143,307.8
Percent of total	0.2	0.2	0.1	0.1	0.2	0.5	93.7	95.1	0.9	1.0	0.3	0.3	0.5	0.9	96.1	100.0
New Brunswick-Gulf	24.7	121.9	67.6	74.4	250.8	809.4	11,560.7	12,909.5	197.8	708.7	169.8	175.0	455.7	913.6	11,634.9	14,255.5
Percent of total	0.2	0.9	0.5	0.5	1.8	5.7	81.1	90.6	1.4	5.0	1.2	1.2	3.2	6.4	81.6	100.0
Nova Scotia-Gulf	8.9	36.5	17.4	23.3	64.3	217.3	13,715.1	14,082.8	117.7	190.8	57.4	62.4	136.5	353.7	13,857.1	14,775.7
Percent of total	0.1	0.2	0.1	0.2	0.4	1.5	92.8	95.3	0.8	1.3	0.4	0.4	0.9	2.4	93.8	100.0
Prince Edward Island	64.2	107.2	64.8	79.9	192.7	486.0	20,595.9	21,590.7	345.6	380.6	147.5	164.9	321.7	605.3	20,701.5	22,667.0
Percent of total	0.3	0.5	0.3	0.4	0.9	2.1	90.9	95.3	1.5	1.7	0.7	0.7	1.4	2.7	91.3	100.0
Maritime Provinces-Gulf	97.8	265.7	149.8	177.5	507.9	1,512.7	45,871.7	48,583.0	661.1	1,280.1	374.7	402.2	914.0	1,872.6	46,193.5	51,698.2
Percent of total	0.2	0.5	0.3	0.3	1.0	2.9	88.7	94.0	1.3	2.5	0.7	0.8	1.8	3.6	89.4	100.0
Newfoundland-Gulf	10.6	48.3	20.4	20.6	41.4	99.7	34,413.5	34,654.4	71.9	220.1	62.7	57.0	120.1	265.8	35,523.9	36,321.5
Percent of total	0.0	0.1	0.1	0.1	0.1	0.3	94.7	95.4	0.2	0.6	0.2	0.2	0.3	0.7	97.8	100.0

Table 3. Area of aquatic habitat in the St. Lawrence Estuary and Gulf by exposure category and depth zone. See Fig. 1 for sector boundaries. Semi-exposed water bodies are defined using Method 2 (see Methods).

Prov. Sector	Area (km^2)															
	Sheltered								Semi-exposed							
	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total
St. Lawrence Estuary																
QC St. Law. Middle Est.	24.0	3.3	0.5	0.5	1.4	0.3	0.2	30.3	226.4	217.0	119.6	120.3	217.4	228.6	1,221.8	2,351.1
Percent of total	0.9	0.1	0.0	0.0	0.1	0.0	0.0	1.2	8.8	8.5	4.7	4.7	8.5	8.9	47.7	91.8
QC Saguenay Fiord	6.7	26.2	3.8	0.5	3.6	5.5	258.3	304.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percent of total	2.1	8.3	1.2	0.1	1.1	1.8	81.9	96.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
QC St. Law. Lower Est.	55.8	24.8	0.8	0.5	0.4	0.8	1.3	84.4	157.9	69.2	13.5	8.9	12.3	12.3	51.8	325.8
Percent of total	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.9	1.8	0.8	0.2	0.1	0.1	0.1	0.6	3.6
Gulf of St. Lawrence																
QC Gulf North Shore	246.2	396.2	49.2	43.9	75.4	121.8	384.2	1,317.0	99.6	48.2	20.3	21.3	47.6	91.3	869.8	1,198.2
Percent of total	0.5	0.9	0.1	0.1	0.2	0.3	0.8	2.8	0.2	0.1	0.0	0.0	0.1	0.2	1.9	2.6
QC Gaspé	39.1	25.9	1.3	1.2	2.7	3.5	16.0	89.8	23.2	60.9	15.7	12.8	24.5	39.0	353.3	529.4
Percent of total	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.3	0.1	0.1	0.1	0.2	1.6	2.4
QC Anticosti	7.7	3.4	0.2	0.2	0.1	0.0	0.0	11.5	7.4	6.9	2.2	2.3	5.0	6.1	19.5	49.3
Percent of total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
QC Îles-de-la-Madeleine	25.3	81.9	7.0	7.8	12.0	4.0	0.0	138.0	5.6	9.8	6.0	7.8	22.1	70.7	102.7	224.7
Percent of total	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.8
NB Gulf NB	85.4	339.5	11.4	7.4	10.5	5.2	0.4	459.7	64.0	223.2	83.2	88.1	188.5	95.4	72.9	815.4
Percent of total	0.6	2.4	0.1	0.1	0.1	0.0	0.0	3.2	0.4	1.6	0.6	0.6	1.3	0.7	0.5	5.7
NS Gulf NS mainland	73.7	85.4	12.2	6.1	4.8	3.6	2.3	188.2	25.2	29.6	17.3	21.7	45.3	100.4	52.6	292.0
Percent of total	1.8	2.1	0.3	0.1	0.1	0.1	0.1	4.6	0.6	0.7	0.4	0.5	1.1	2.4	1.3	7.1
NS Gulf Cape Breton	1.4	16.8	1.6	1.3	1.4	0.9	1.5	24.9	1.0	8.2	3.1	3.3	7.0	17.3	75.9	115.7
Percent of total	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.2	0.7	1.1
PEI PEI	194.7	186.9	46.9	46.2	54.5	32.0	6.1	567.3	61.5	63.9	30.8	34.9	67.4	83.1	98.5	440.1
Percent of total	0.9	0.8	0.2	0.2	0.2	0.1	0.0	2.5	0.3	0.3	0.1	0.2	0.3	0.4	0.4	1.9
NL Nfld West Coast	38.5	90.9	13.6	6.9	16.8	27.3	97.3	291.2	17.9	63.5	22.6	23.5	50.4	114.7	979.0	1,271.6
Percent of total	0.1	0.3	0.0	0.0	0.0	0.1	0.3	0.8	0.0	0.2	0.1	0.1	0.1	0.3	2.7	3.5
Totals by region and province																
St. Law. Estuary	86.4	54.2	5.0	1.4	5.5	6.7	259.9	419.1	384.4	286.2	133.1	129.1	229.7	240.9	1,273.6	2,676.9
Percent of total	0.7	0.5	0.0	0.0	0.0	0.1	2.2	3.5	3.2	2.4	1.1	1.1	1.9	2.0	10.8	22.6
Gulf of St. Lawrence	712.0	1,226.8	143.5	121.0	178.2	198.3	507.8	3,087.6	305.3	514.3	201.1	215.7	457.9	617.9	2,624.2	4,936.3
Percent of total	0.3	0.6	0.1	0.1	0.1	0.1	0.2	1.4	0.1	0.2	0.1	0.1	0.2	0.3	1.2	2.2
St. Law. Est. and Gulf	798.4	1,281.1	148.5	122.4	183.7	205.0	767.6	3,506.7	689.7	800.5	334.2	344.8	687.6	858.8	3,897.7	7,613.2
Percent of total	0.3	0.6	0.1	0.1	0.1	0.1	0.3	1.5	0.3	0.3	0.1	0.1	0.3	0.4	1.7	3.3
Northern Gulf	294.0	492.3	63.3	51.1	92.7	149.4	481.5	1,624.3	124.9	118.6	45.0	47.2	103.1	212.1	1,868.2	2,519.1
Percent of total	0.2	0.4	0.0	0.0	0.1	0.1	0.4	1.2	0.1	0.1	0.0	0.0	0.1	0.2	1.4	1.8
Southern Gulf	418.1	734.6	80.1	69.8	85.5	49.0	26.3	1,463.3	180.4	395.6	156.1	168.5	354.8	405.8	755.9	2,417.2
Percent of total	0.5	0.9	0.1	0.1	0.1	0.1	0.0	1.8	0.2	0.5	0.2	0.2	0.4	0.5	0.9	2.9
Quebec-Gulf	318.4	507.4	57.7	53.1	90.2	129.3	400.2	1,556.3	135.7	125.8	44.1	44.3	99.3	207.1	1,345.3	2,001.5
Percent of total	0.2	0.4	0.0	0.0	0.1	0.1	0.3	1.2	0.1	0.1	0.0	0.0	0.1	0.2	1.0	1.5
Quebec-total	404.8	561.7	62.7	54.5	95.7	136.0	660.1	1,975.4	520.0	412.0	177.1	173.4	329.0	448.0	2,618.8	4,678.4
Percent of total	0.3	0.4	0.0	0.0	0.1	0.1	0.5	1.4	0.4	0.3	0.1	0.1	0.2	0.3	1.8	3.3
New Brunswick-Gulf	85.4	339.5	11.4	7.4	10.5	5.2	0.4	459.7	64.0	223.2	83.2	88.1	188.5	95.4	72.9	815.4
Percent of total	0.6	2.4	0.1	0.1	0.1	0.0	0.0	3.2	0.4	1.6	0.6	0.6	1.3	0.7	0.5	5.7
Nova Scotia-Gulf	75.1	102.2	13.9	7.4	6.2	4.5	3.8	213.1	26.2	37.8	20.4	25.0	52.2	117.6	128.5	407.7
Percent of total	0.5	0.7	0.1	0.1	0.0	0.0	0.0	1.4	0.2	0.3	0.1	0.2	0.4	0.8	0.9	2.8
Prince Edward Island	194.7	186.9	46.9	46.2	54.5	32.0	6.1	567.3	61.5	63.9	30.8	34.9	67.4	83.1	98.5	440.1
Percent of total	0.9	0.8	0.2	0.2	0.2	0.1	0.0	2.5	0.3	0.3	0.1	0.2	0.3	0.4	0.4	1.9
Maritime Provinces-Gulf	355.2	628.5	72.1	61.0	71.2	41.7	10.3	1,240.1	151.7	324.9	134.5	147.9	308.1	296.2	299.9	1,663.2
Percent of total	0.7	1.2	0.1	0.1	0.1	0.1	0.0	2.4	0.3	0.6	0.3	0.3	0.6	0.6	0.6	3.2
Newfoundland-Gulf	38.5	90.9	13.6	6.9	16.8	27.3	97.3	291.2	17.9	63.5	22.6	23.5	50.4	114.7	979.0	1,271.6
Percent of total	0.1	0.3	0.0	0.0	0.0	0.1	0.3	0.8	0.0	0.2	0.1	0.1	0.1	0.3	2.7	3.5

Table 3 (continued)

Prov. Sector	Area (km^2)															
	Exposed								Total							
	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total	Inter-tidal	0-2 m	2-3 m	3-4 m	4-6 m	6-10 m	>10 m	Total
St. Lawrence Estuary																
QC St. Law. Middle Est.	21.0	12.7	2.6	2.2	2.6	3.7	135.7	180.5	271.4	233.1	122.6	122.9	221.5	232.6	1,357.7	2,561.9
Percent of total	0.8	0.5	0.1	0.1	0.1	0.1	5.3	7.0	10.6	9.1	4.8	4.8	8.6	9.1	53.0	100.0
QC Saguenay Fiord	1.6	0.8	0.1	0.1	0.2	0.3	8.0	11.1	8.2	27.0	3.9	0.5	3.8	5.8	266.3	315.6
Percent of total	0.5	0.3	0.0	0.0	0.1	0.1	2.5	3.5	2.6	8.5	1.2	0.2	1.2	1.9	84.4	100.0
QC St. Law. Lower Est.	205.9	134.1	52.7	52.2	105.9	172.4	7,826.3	8,549.5	419.6	228.0	66.9	61.6	118.6	185.5	7,879.5	8,959.7
Percent of total	2.3	1.5	0.6	0.6	1.2	1.9	87.4	95.4	4.7	2.5	0.7	0.7	1.3	2.1	87.9	100.0
Gulf of St. Lawrence																
QC Gulf North Shore	39.7	102.1	42.2	43.8	92.4	227.3	43,188.2	43,735.8	385.5	546.6	111.7	109.1	215.4	440.4	44,442.2	46,250.9
Percent of total	0.1	0.2	0.1	0.1	0.2	0.5	93.4	94.6	0.8	1.2	0.2	0.2	0.5	1.0	96.1	100.0
QC Gaspé	26.4	55.3	20.1	19.6	42.5	96.3	20,926.1	21,186.2	88.7	142.1	37.1	33.7	69.7	138.9	21,295.3	21,805.4
Percent of total	0.1	0.3	0.1	0.1	0.2	0.4	96.0	97.2	0.4	0.7	0.2	0.2	0.3	0.6	97.7	100.0
QC Anticosti	103.5	83.1	34.0	34.6	73.8	156.5	33,483.4	33,969.0	118.6	93.4	36.3	37.1	79.0	162.5	33,502.9	34,029.8
Percent of total	0.3	0.2	0.1	0.1	0.2	0.5	98.4	99.8	0.3	0.3	0.1	0.1	0.2	0.5	98.5	100.0
QC Îles-de-la-Madeleine	10.3	16.6	12.9	14.3	38.5	117.6	28,803.6	29,013.9	41.2	108.3	25.9	30.0	72.7	192.3	28,906.3	29,376.6
Percent of total	0.0	0.1	0.0	0.0	0.1	0.4	98.0	98.8	0.1	0.4	0.1	0.1	0.2	0.7	98.4	100.0
NB Gulf NB	48.4	146.0	75.2	79.5	256.7	813.0	11,561.6	12,980.4	197.8	708.7	169.8	175.0	455.8	913.6	11,634.9	14,255.5
Percent of total	0.3	1.0	0.5	0.6	1.8	5.7	81.1	91.1	1.4	5.0	1.2	1.2	3.2	6.4	81.6	100.0
NS Gulf NS mainland	15.2	36.5	17.0	22.9	60.8	188.7	3,310.9	3,652.0	114.2	151.5	46.5	50.7	110.9	292.8	3,365.8	4,132.2
Percent of total	0.4	0.9	0.4	0.6	1.5	4.6	80.1	88.4	2.8	3.7	1.1	1.2	2.7	7.1	81.5	100.0
NS Gulf Cape Breton	1.1	14.3	6.2	7.1	17.4	42.8	10,414.4	10,503.2	3.6	39.3	11.0	11.7	25.7	60.9	10,491.7	10,643.8
Percent of total	0.0	0.1	0.1	0.1	0.2	0.4	97.8	98.7	0.0	0.4	0.1	0.1	0.2	0.6	98.6	100.0
PEI PEI	89.4	129.8	69.8	83.9	199.8	490.2	20,596.9	21,659.8	345.6	380.6	147.5	165.0	321.7	605.3	20,701.5	22,667.1
Percent of total	0.4	0.6	0.3	0.4	0.9	2.2	90.9	95.6	1.5	1.7	0.7	0.7	1.4	2.7	91.3	100.0
NL Nfld West Coast	15.5	65.7	26.5	26.6	52.9	123.8	34,445.6	34,756.6	71.9	220.1	62.7	57.0	120.1	265.8	35,521.8	36,319.5
Percent of total	0.0	0.2	0.1	0.1	0.1	0.3	94.8	95.7	0.2	0.6	0.2	0.2	0.3	0.7	97.8	100.0
Totals by region and province																
St. Law. Estuary	228.5	147.6	55.3	54.5	108.7	176.4	7,970.1	8,741.1	699.2	488.1	193.4	185.0	343.9	424.0	9,503.5	11,837.1
Percent of total	1.9	1.2	0.5	0.5	0.9	1.5	67.3	73.8	5.9	4.1	1.6	1.6	2.9	3.6	80.3	100.0
Gulf of St. Lawrence	349.6	649.4	303.8	332.4	834.8	2,256.3	206,730.5	211,456.9	1,366.9	2,390.5	648.4	669.1	1,470.8	3,072.6	209,862.5	219,480.8
Percent of total	0.2	0.3	0.1	0.2	0.4	1.0	94.2	96.3	0.6	1.1	0.3	0.3	0.7	1.4	95.6	100.0
St. Law. Est. and Gulf	578.0	797.0	359.2	386.9	943.5	2,432.7	214,700.6	220,198.0	2,066.2	2,878.6	841.8	854.1	1,814.8	3,496.5	219,366.0	231,317.9
Percent of total	0.2	0.3	0.2	0.2	0.4	1.1	92.8	95.2	0.9	1.2	0.4	0.4	0.8	1.5	94.8	100.0
Northern Gulf	182.2	273.8	111.5	113.7	236.9	547.5	131,053.6	132,519.3	601.0	884.7	219.9	212.0	432.7	909.0	133,403.3	136,662.7
Percent of total	0.1	0.2	0.1	0.1	0.2	0.4	95.9	97.0	0.4	0.6	0.2	0.2	0.3	0.7	97.6	100.0
Southern Gulf	167.4	375.6	192.3	218.7	597.9	1,708.8	75,676.9	78,937.6	765.9	1,505.8	428.5	457.0	1,038.1	2,163.6	76,459.1	82,818.1
Percent of total	0.2	0.5	0.2	0.3	0.7	2.1	91.4	95.3	0.9	1.8	0.5	0.6	1.3	2.6	92.3	100.0
Quebec-Gulf	179.9	257.2	109.2	112.4	247.2	597.7	126,401.3	127,904.9	633.9	890.4	210.9	209.8	436.7	934.1	128,146.7	131,462.7
Percent of total	0.1	0.2	0.1	0.1	0.2	0.5	96.1	97.3	0.5	0.7	0.2	0.2	0.3	0.7	97.5	100.0
Quebec-total	408.3	404.8	164.5	166.9	356.0	774.1	134,371.4	136,645.9	1,333.1	1,378.5	404.3	394.8	780.7	1,358.1	137,650.2	143,299.8
Percent of total	0.3	0.3	0.1	0.1	0.2	0.5	93.8	95.4	0.9	1.0	0.3	0.3	0.5	0.9	96.1	100.0
New Brunswick-Gulf	48.4	146.0	75.2	79.5	256.7	813.0	11,561.6	12,980.4	197.8	708.7	169.8	175.0	455.8	913.6	11,634.9	14,255.5
Percent of total	0.3	1.0	0.5	0.6	1.8	5.7	81.1	91.1	1.4	5.0	1.2	1.2	3.2	6.4	81.6	100.0
Nova Scotia-Gulf	16.4	50.8	23.2	30.0	78.2	231.5	13,725.2	14,155.3	117.7	190.8	57.4	62.4	136.5	353.7	13,857.5	14,776.1
Percent of total	0.1	0.3	0.2	0.2	0.5	1.6	92.9	95.8	0.8	1.3	0.4	0.4	0.9	2.4	93.8	100.0
Prince Edward Island	89.4	129.8	69.8	83.9	199.8	490.2	20,596.9	21,659.8	345.6	380.6	147.5	165.0	321.7	605.3	20,701.5	22,667.1
Percent of total	0.4	0.6	0.3	0.4	0.9	2.2	90.9	95.6	1.5	1.7	0.7	0.7	1.4	2.7	91.3	100.0
Maritime Provinces-Gulf	154.2	326.6	168.1	193.4	534.7	1,534.8	45,883.7	48,795.5	661.1	1,280.1	374.7	402.3	914.0	1,872.6	46,193.9	51,698.7
Percent of total	0.3	0.6	0.3	0.4	1.0	3.0	88.8	94.4	1.3	2.5	0.7	0.8	1.8	3.6	89.4	100.0
Newfoundland-Gulf	15.5	65.7	26.5	26.6	52.9	123.8	34,445.6	34,756.6	71.9	220.1	62.7	57.0	120.1	265.8	35,521.8	36,319.5
Percent of total	0.0	0.2	0.1	0.1	0.1	0.3	94.8	95.7	0.2	0.6	0.2	0.2	0.3	0.7	97.8	100.0

Table 4. Areas of aquatic habitat in eastern Canada and St. Pierre and Miquelon, by exposure category and tidal zone. Semi-exposed water bodies are defined using Method 2 (see Methods).

Juris-diction	Sector	Area (km^2)												% of total[a]
		Sheltered			Semi-exposed			Exposed			Total			
		Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	
St. Lawrence Estuary														
QC	St. Lawrence Middle Est.	24.0	6.3	30.3	226.4	2,124.7	2,351.1	21.0	159.5	180.5	271.4	2,290.5	2,561.9	0.28
	Percent of total	0.9	0.2	1.2	8.8	82.9	91.8	0.8	6.2	7.0	10.6	89.4	100.0	
QC	Saguenay Fiord	6.7	297.8	304.5	0.0	0.0	0.0	1.6	9.5	11.1	8.2	307.3	315.6	0.03
	Percent of total	2.1	94.4	96.5	0.0	0.0	0.0	0.5	3.0	3.5	2.6	97.4	100.0	
QC	St. Lawrence Lower Est.	55.8	28.6	84.4	157.9	167.9	325.8	205.9	8,343.6	8,549.5	419.6	8,540.0	8,959.7	0.98
	Percent of total	0.6	0.3	0.9	1.8	1.9	3.6	2.3	93.1	95.4	4.7	95.3	100.0	
Gulf of St. Lawrence														
QC	Gulf North Shore	246.2	1,070.8	1,317.0	99.6	1,098.6	1,198.2	39.7	43,696.0	43,735.8	385.5	45,865.4	46,250.9	5.06
	Percent of total	0.5	2.3	2.8	0.2	2.4	2.6	0.1	94.5	94.6	0.8	99.2	100.0	
QC	Gaspé	39.1	50.7	89.8	23.2	506.2	529.4	26.4	21,159.9	21,186.2	88.7	21,716.7	21,805.4	2.39
	Percent of total	0.2	0.2	0.4	0.1	2.3	2.4	0.1	97.0	97.2	0.4	99.6	100.0	
QC	Anticosti	7.7	3.8	11.5	7.4	41.9	49.3	103.5	33,865.5	33,969.0	118.6	33,911.2	34,029.8	3.73
	Percent of total	0.0	0.0	0.0	0.0	0.1	0.1	0.3	99.5	99.8	0.3	99.7	100.0	
QC	Îles-de-la-Madeleine	25.3	112.7	138.0	5.6	219.1	224.7	10.3	29,003.6	29,013.9	41.2	29,335.4	29,376.6	3.22
	Percent of total	0.1	0.4	0.5	0.0	0.7	0.8	0.0	98.7	98.8	0.1	99.9	100.0	
NB	Gulf New Brunswick	85.4	374.3	459.7	64.0	751.4	815.4	48.4	12,932.0	12,980.4	197.8	14,057.7	14,255.5	1.56
	Percent of total	0.6	2.6	3.2	0.4	5.3	5.7	0.3	90.7	91.1	1.4	98.6	100.0	
NS	Gulf Nova Scotia mainland	73.7	114.5	188.2	25.2	266.8	292.0	15.2	3,636.8	3,652.0	114.2	4,018.1	4,132.2	0.45
	Percent of total	1.8	2.8	4.6	0.6	6.5	7.1	0.4	88.0	88.4	2.8	97.2	100.0	
NS	Gulf Cape Breton	1.4	23.5	24.9	1.0	114.7	115.7	1.1	10,502.1	10,503.2	3.6	10,640.3	10,643.8	1.17
	Percent of total	0.0	0.2	0.2	0.0	1.1	1.1	0.0	98.7	98.7	0.0	100.0	100.0	
PEI	Prince Edward Island	194.7	372.5	567.3	61.5	378.6	440.1	89.4	21,570.4	21,659.8	345.6	22,321.5	22,667.1	2.48
	Percent of total	0.9	1.6	2.5	0.3	1.7	1.9	0.4	95.2	95.6	1.5	98.5	100.0	
NL	Newfoundland West Coast	38.5	252.8	291.2	17.9	1,253.7	1,271.6	15.5	34,741.1	34,756.6	71.9	36,247.5	36,319.5	3.98
	Percent of total	0.1	0.7	0.8	0.0	3.5	3.5	0.0	95.7	95.7	0.2	99.8	100.0	
Atlantic Ocean and Bay of Fundy														
NL	Nfld Strait of Belle Isle	8.3	58.1	66.4	0.3	155.5	155.8	0.2	1,832.2	1,832.3	8.8	2,045.7	2,054.5	0.22
	Percent of total	0.4	2.8	3.2	0.0	7.6	7.6	0.0	89.2	89.2	0.4	99.6	100.0	
NL	Nfld Northeast Coast	37.7	1,123.6	1,161.3	6.6	3,319.9	3,326.5	5.0	89,231.1	89,236.1	49.3	93,674.6	93,723.9	10.26
	Percent of total	0.0	1.2	1.2	0.0	3.5	3.5	0.0	95.2	95.2	0.1	99.9	100.0	
NL	Nfld East Coast	14.1	1,009.8	1,023.9	2.0	1,788.2	1,790.2	0.1	204,065.3	204,065.4	16.2	206,863.3	206,879.5	22.65
	Percent of total	0.0	0.5	0.5	0.0	0.9	0.9	0.0	98.6	98.6	0.0	100.0	100.0	
NL	Nfld South Coast	18.8	1,134.1	1,152.9	2.5	3,385.2	3,387.7	3.0	147,601.6	147,604.6	24.3	152,120.9	152,145.2	16.66
	Percent of total	0.0	0.7	0.8	0.0	2.2	2.2	0.0	97.0	97.0	0.0	100.0	100.0	
Fr	St. Pierre and Miq. (SPM)	5.4	16.4	21.8	1.1	129.9	131.0	1.8	9,427.3	9,429.0	8.3	9,573.6	9,581.8	1.05
	Percent of total	0.1	0.2	0.2	0.0	1.4	1.4	0.0	98.4	98.4	0.1	99.9	100.0	
NS	Atlantic Cape Breton	30.5	184.3	214.9	4.7	835.7	840.4	4.0	41,360.4	41,364.4	39.1	42,380.5	42,419.6	4.64
	Percent of total	0.1	0.4	0.5	0.0	2.0	2.0	0.0	97.5	97.5	0.1	99.9	100.0	
NS	Bras d'Or Lakes	4.3	487.2	491.5	0.0	578.1	578.1	0.0	0.0	0.0	4.3	1,065.3	1,069.6	0.12
	Percent of total	0.4	45.6	46.0	0.0	54.0	54.0	0.0	0.0	0.0	0.4	99.6	100.0	
NS	NS Eastern Shore	126.4	381.5	507.8	12.3	741.3	753.6	14.7	72,211.1	72,225.8	153.3	73,333.9	73,487.2	8.05
	Percent of total	0.2	0.5	0.7	0.0	1.0	1.0	0.0	98.3	98.3	0.2	99.8	100.0	
NS	NS South Shore	53.9	364.0	417.9	15.9	781.9	797.8	5.9	49,558.8	49,564.6	75.7	50,704.7	50,780.4	5.56
	Percent of total	0.1	0.7	0.8	0.0	1.5	1.6	0.0	97.6	97.6	0.1	99.9	100.0	
NS	NS Gulf of Maine	106.1	126.6	232.7	33.4	601.9	635.2	5.3	31,757.6	31,762.8	144.7	32,486.0	32,630.7	3.57
	Percent of total	0.3	0.4	0.7	0.1	1.8	1.9	0.0	97.3	97.3	0.4	99.6	100.0	
NS	NS Bay of Fundy	97.9	98.4	196.3	400.0	1,894.9	2,294.9	1.5	5,592.8	5,594.3	499.4	7,586.1	8,085.4	0.89
	Percent of total	1.2	1.2	2.4	4.9	23.4	28.4	0.0	69.2	69.2	6.2	93.8	100.0	
NB	NB Bay of Fundy	80.8	573.3	654.2	86.0	902.0	988.0	14.6	7,429.6	7,444.2	181.4	8,904.9	9,086.3	0.99
	Percent of total	0.9	6.3	7.2	0.9	9.9	10.9	0.2	81.8	81.9	2.0	98.0	100.0	

Table 4 (continued)

Juris-diction	Area (km^2)												% of total[a]
	Sheltered			Semi-exposed			Exposed			Total			
	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	
Totals by region and jurisdiction													
St. Lawrence Estuary	86.4	332.7	419.1	384.4	2,292.6	2,676.9	228.5	8,512.6	8,741.1	699.2	11,137.9	11,837.1	1.30
Percent of total	0.7	2.8	3.5	3.2	19.4	22.6	1.9	71.9	73.8	5.9	94.1	100.0	
Gulf of St. Lawrence	712.0	2,375.5	3,087.6	305.3	4,631.0	4,936.3	349.6	211,107.4	211,456.9	1,366.9	218,113.9	219,480.8	24.03
Percent of total	0.3	1.1	1.4	0.1	2.1	2.2	0.2	96.2	96.3	0.6	99.4	100.0	
St. Lawrence Estuary and Gulf	798.4	2,708.2	3,506.7	689.7	6,923.5	7,613.2	578.0	219,620.0	220,198.0	2,066.2	229,251.7	231,317.9	25.33
Percent of total	0.3	1.2	1.5	0.3	3.0	3.3	0.2	94.9	95.2	0.9	99.1	100.0	
Northern Gulf	294.0	1,330.3	1,624.3	124.9	2,394.2	2,519.1	182.2	132,337.2	132,519.3	601.0	136,061.7	136,662.7	14.96
Percent of total	0.2	1.0	1.2	0.1	1.8	1.8	0.1	96.8	97.0	0.4	99.6	100.0	
Southern Gulf	418.1	1,045.2	1,463.3	180.4	2,236.8	2,417.2	167.4	78,770.2	78,937.6	765.9	82,052.2	82,818.1	9.07
Percent of total	0.5	1.3	1.8	0.2	2.7	2.9	0.2	95.1	95.3	0.9	99.1	100.0	
Quebec-Gulf	318.4	1,237.9	1,556.3	135.7	1,865.8	2,001.5	179.9	127,725.0	127,904.9	633.9	130,828.7	131,462.7	14.39
Percent of total	0.2	0.9	1.2	0.1	1.4	1.5	0.1	97.2	97.3	0.5	99.5	100.0	
Quebec-total	404.8	1,570.6	1,975.4	520.0	4,158.4	4,678.4	408.3	136,237.6	136,645.9	1,333.1	141,966.6	143,299.8	15.69
Percent of total	0.3	1.1	1.4	0.4	2.9	3.3	0.3	95.1	95.4	0.9	99.1	100.0	
New Brunswick-Gulf	85.4	374.3	459.7	64.0	751.4	815.4	48.4	12,932.0	12,980.4	197.8	14,057.7	14,255.5	1.56
Percent of total	0.6	2.6	3.2	0.4	5.3	5.7	0.3	90.7	91.1	1.4	98.6	100.0	
Nova Scotia-Gulf	75.1	138.0	213.1	26.2	381.5	407.7	16.4	14,138.9	14,155.3	117.7	14,658.3	14,776.1	1.62
Percent of total	0.5	0.9	1.4	0.2	2.6	2.8	0.1	95.7	95.8	0.8	99.2	100.0	
Prince Edward Island	194.7	372.5	567.3	61.5	378.6	440.1	89.4	21,570.4	21,659.8	345.6	22,321.5	22,667.1	2.48
Percent of total	0.9	1.6	2.5	0.3	1.7	1.9	0.4	95.2	95.6	1.5	98.5	100.0	
Maritime Provinces-Gulf	355.2	884.8	1,240.1	151.7	1,511.5	1,663.2	154.2	48,641.3	48,795.5	661.1	51,037.6	51,698.7	5.66
Percent of total	0.7	1.7	2.4	0.3	2.9	3.2	0.3	94.1	94.4	1.3	98.7	100.0	
Newfoundland-Gulf	38.5	252.8	291.2	17.9	1,253.7	1,271.6	15.5	34,741.1	34,756.6	71.9	36,247.5	36,319.5	3.98
Percent of total	0.1	0.7	0.8	0.0	3.5	3.5	0.0	95.7	95.7	0.2	99.8	100.0	
Newfoundland-Atlantic	78.9	3,325.6	3,404.5	11.5	8,648.7	8,660.2	8.2	442,730.2	442,738.5	98.6	454,704.6	454,803.1	49.80
Percent of total	0.0	0.7	0.7	0.0	1.9	1.9	0.0	97.3	97.3	0.0	100.0	100.0	
Newfoundland-total	117.3	3,578.4	3,695.7	29.4	9,902.4	9,931.8	23.7	477,471.3	477,495.1	170.5	490,952.1	491,122.6	53.78
Percent of total	0.0	0.7	0.8	0.0	2.0	2.0	0.0	97.2	97.2	0.0	100.0	100.0	
Scotia-Fundy	499.9	2,215.3	2,715.2	562.3	6,335.7	6,888.1	45.8	207,910.3	207,956.1	1,098.1	216,461.3	217,559.4	23.82
Percent of total	0.2	1.0	1.2	0.3	2.9	3.2	0.0	95.6	95.6	0.5	99.5	100.0	
Nova Scotia - Atlantic-Fundy	419.1	1,642.0	2,061.1	466.3	5,433.8	5,900.1	31.3	200,480.7	200,512.0	916.6	207,556.5	208,473.1	22.83
Percent of total	0.2	0.8	1.0	0.2	2.6	2.8	0.0	96.2	96.2	0.4	99.6	100.0	
Nova Scotia-total	494.2	1,780.0	2,274.2	492.5	5,815.3	6,307.8	47.6	214,619.6	214,667.2	1,034.4	222,214.8	223,249.2	24.45
Percent of total	0.2	0.8	1.0	0.2	2.6	2.8	0.0	96.1	96.2	0.5	99.5	100.0	
New Brunswick-total	166.2	947.6	1,113.8	150.0	1,653.4	1,803.4	63.0	20,361.6	20,424.6	379.2	22,962.6	23,341.8	2.56
Percent of total	0.7	4.1	4.8	0.6	7.1	7.7	0.3	87.2	87.5	1.6	98.4	100.0	
Newfoundland-Atlantic and SPM	84.3	3,342.0	3,426.3	12.5	8,778.6	8,791.1	10.0	452,157.5	452,167.5	106.8	464,278.1	464,385.0	50.85
Percent of total	0.0	0.7	0.7	0.0	1.9	1.9	0.0	97.4	97.4	0.0	100.0	100.0	
Atlantic-Fundy, Canadian waters only	578.8	5,541.0	6,119.7	563.8	14,984.4	15,548.2	54.1	650,640.5	650,694.6	1,196.6	671,165.9	672,362.5	73.62
Percent of total	0.1	0.8	0.9	0.1	2.2	2.3	0.0	96.8	96.8	0.2	99.8	100.0	
Atlantic-Fundy, including SPM	584.2	5,557.4	6,141.6	584.8	15,114.3	15,679.2	55.9	660,067.8	660,123.6	1,204.9	680,739.5	681,944.4	74.67
Percent of total	0.1	0.8	0.9	0.1	2.2	2.3	0.0	96.8	96.8	0.2	99.8	100.0	
Gulf of St. Law. and Atlantic-Fundy, Canadian waters only	1,290.8	7,916.5	9,207.3	869.1	19,615.4	20,484.5	403.6	861,747.9	862,151.5	2,563.6	889,279.8	891,843.3	97.65
Percent of total	0.1	0.9	1.0	0.1	2.2	2.3	0.0	96.6	96.7	0.3	99.7	100.0	
Gulf of St. Law. and Atlantic-Fundy, including SPM	1,296.2	7,932.9	9,229.1	870.2	19,745.3	20,615.5	405.4	871,175.1	871,580.6	2,571.8	898,853.3	901,425.1	98.70
Percent of total	0.1	0.9	1.0	0.1	2.2	2.3	0.0	96.6	96.7	0.3	99.7	100.0	
St. Law. Estuary and Gulf and Atlantic-Fundy, Canadian waters only	1,377.2	8,249.2	9,626.4	1,253.5	21,908.0	23,161.4	632.1	870,260.5	870,892.6	3,262.8	900,417.6	903,680.4	98.95
Percent of total	0.2	0.9	1.1	0.1	2.4	2.6	0.1	96.3	96.4	0.4	99.6	100.0	
St. Law. Estuary and Gulf and Atlantic-Fundy, including SPM	1,382.6	8,265.6	9,648.2	1,254.5	22,037.9	23,292.4	633.9	879,687.7	880,321.6	3,271.0	909,991.2	913,262.3	100.00
Percent of total	0.2	0.9	1.1	0.1	2.4	2.6	0.1	96.3	96.4	0.4	99.6	100.0	

[a]Percent of area of St. Lawrence Estuary and Gulf and Atlantic-Fundy, including St. Pierre and Miquelon

Table 5. Areas of aquatic habitat in eastern Canada and St. Pierre and Miquelon, as percentages of regions and the study area. Semi-exposed water bodies are defined using Method 2 (see Methods).

Region Sector	Percent of	Percent of region or study area											
		Sheltered			Semi-exposed			Exposed			Total		
		Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total	Inter-tidal	Sub-tidal	Total
St. Lawrence Estuary													
St. Lawrence Middle Est.	Region	0.202	0.053	0.256	1.913	17.949	19.862	0.177	1.348	1.525	2.293	19.350	21.643
	Study area	0.003	0.001	0.003	0.025	0.233	0.257	0.002	0.017	0.020	0.030	0.251	0.281
Saguenay Fiord	Region	0.056	2.516	2.572	0.000	0.000	0.000	0.013	0.080	0.094	0.069	2.596	2.666
	Study area	0.001	0.033	0.033	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.034	0.035
St. Lawrence Lower Est.	Region	0.471	0.241	0.713	1.334	1.418	2.752	1.739	70.487	72.226	3.545	72.146	75.691
	Study area	0.006	0.003	0.009	0.017	0.018	0.036	0.023	0.914	0.936	0.046	0.935	0.981
Total	Study area	0.009	0.036	0.046	0.042	0.251	0.293	0.025	0.932	0.957	0.077	1.220	1.296
Gulf of St. Lawrence													
Gulf North Shore	Region	0.112	0.488	0.600	0.045	0.501	0.546	0.018	19.909	19.927	0.176	20.897	21.073
	Study area	0.027	0.117	0.144	0.011	0.120	0.131	0.004	4.785	4.789	0.042	5.022	5.064
Gaspé	Region	0.018	0.023	0.041	0.011	0.231	0.241	0.012	9.641	9.653	0.040	9.895	9.935
	Study area	0.004	0.006	0.010	0.003	0.055	0.058	0.003	2.317	2.320	0.010	2.378	2.388
Anticosti	Region	0.004	0.002	0.005	0.003	0.019	0.022	0.047	15.430	15.477	0.054	15.451	15.505
	Study area	0.001	0.000	0.001	0.001	0.005	0.005	0.011	3.708	3.720	0.013	3.713	3.726
Îles-de-la-Madeleine	Region	0.012	0.051	0.063	0.003	0.100	0.102	0.005	13.215	13.219	0.019	13.366	13.385
	Study area	0.003	0.012	0.015	0.001	0.024	0.025	0.001	3.176	3.177	0.005	3.212	3.217
Gulf New Brunswick	Region	0.039	0.171	0.209	0.029	0.342	0.372	0.022	5.892	5.914	0.090	6.405	6.495
	Study area	0.009	0.041	0.050	0.007	0.082	0.089	0.005	1.416	1.421	0.022	1.539	1.561
Gulf Nova Scotia mainland	Region	0.034	0.052	0.086	0.012	0.122	0.133	0.007	1.657	1.664	0.052	1.831	1.883
	Study area	0.008	0.013	0.021	0.003	0.029	0.032	0.002	0.398	0.400	0.013	0.440	0.452
Gulf Cape Breton	Region	0.001	0.011	0.011	0.000	0.052	0.053	0.001	4.785	4.785	0.002	4.848	4.850
	Study area	0.000	0.003	0.003	0.000	0.013	0.013	0.000	1.150	1.150	0.000	1.165	1.165
Prince Edward Island	Region	0.089	0.170	0.258	0.028	0.172	0.201	0.041	9.828	9.869	0.157	10.170	10.328
	Study area	0.021	0.041	0.062	0.007	0.041	0.048	0.010	2.362	2.372	0.038	2.444	2.482
Newfoundland West Coast	Region	0.018	0.115	0.133	0.008	0.571	0.579	0.007	15.829	15.836	0.033	16.515	16.548
	Study area	0.004	0.028	0.032	0.002	0.137	0.139	0.002	3.804	3.806	0.008	3.969	3.977
Total	Study area	0.078	0.260	0.338	0.033	0.507	0.541	0.038	23.116	23.154	0.150	23.883	24.033
Atlantic-Newfoundland and St. Pierre and Miquelon													
Nfld Strait of Belle Isle	Region	0.002	0.013	0.014	0.000	0.033	0.034	0.000	0.395	0.395	0.002	0.441	0.442
	Study area	0.001	0.006	0.007	0.000	0.017	0.017	0.000	0.201	0.201	0.001	0.224	0.225
Nfld Northeast Coast	Region	0.008	0.242	0.250	0.001	0.715	0.716	0.001	19.215	19.216	0.011	20.172	20.182
	Study area	0.004	0.123	0.127	0.001	0.364	0.364	0.001	9.771	9.771	0.005	10.257	10.263
Nfld East Coast	Region	0.003	0.217	0.220	0.000	0.385	0.386	0.000	43.943	43.943	0.003	44.546	44.549
	Study area	0.002	0.111	0.112	0.000	0.196	0.196	0.000	22.345	22.345	0.002	22.651	22.653
Nfld South Coast	Region	0.004	0.244	0.248	0.001	0.729	0.730	0.001	31.784	31.785	0.005	32.757	32.763
	Study area	0.002	0.124	0.126	0.000	0.371	0.371	0.000	16.162	16.162	0.003	16.657	16.660
St. Pierre and Miquelon	Region	0.001	0.004	0.005	0.000	0.028	0.028	0.000	2.030	2.030	0.002	2.062	2.063
	Study area	0.001	0.002	0.002	0.000	0.014	0.014	0.000	1.032	1.032	0.001	1.048	1.049
Total	Study area	0.009	0.366	0.375	0.001	0.961	0.963	0.001	49.510	49.511	0.012	50.837	50.849
Scotia-Fundy													
Atlantic Cape Breton	Region	0.014	0.085	0.099	0.002	0.384	0.386	0.002	19.011	19.013	0.018	19.480	19.498
	Study area	0.003	0.020	0.024	0.001	0.092	0.092	0.000	4.529	4.529	0.004	4.641	4.645
Bras d'Or Lakes	Region	0.002	0.224	0.226	0.000	0.266	0.266	0.000	0.000	0.000	0.002	0.490	0.492
	Study area	0.000	0.053	0.054	0.000	0.063	0.063	0.000	0.000	0.000	0.000	0.117	0.117
NS Eastern Shore	Region	0.058	0.175	0.233	0.006	0.341	0.346	0.007	33.191	33.198	0.070	33.708	33.778
	Study area	0.014	0.042	0.056	0.001	0.081	0.083	0.002	7.907	7.909	0.017	8.030	8.047
NS South Shore	Region	0.025	0.167	0.192	0.007	0.359	0.367	0.003	22.779	22.782	0.035	23.306	23.341
	Study area	0.006	0.040	0.046	0.002	0.086	0.087	0.001	5.427	5.427	0.008	5.552	5.560
NS Gulf of Maine	Region	0.049	0.058	0.107	0.015	0.277	0.292	0.002	14.597	14.600	0.067	14.932	14.999
	Study area	0.012	0.014	0.025	0.004	0.066	0.070	0.001	3.477	3.478	0.016	3.557	3.573
NS Bay of Fundy	Region	0.045	0.045	0.090	0.184	0.871	1.055	0.001	2.571	2.571	0.230	3.487	3.716
	Study area	0.011	0.011	0.021	0.044	0.207	0.251	0.000	0.612	0.613	0.055	0.831	0.885
NB Bay of Fundy	Region	0.037	0.264	0.301	0.040	0.415	0.454	0.007	3.415	3.422	0.083	4.093	4.176
	Study area	0.009	0.063	0.072	0.009	0.099	0.108	0.002	0.814	0.815	0.020	0.975	0.995
Total	Study area	0.055	0.243	0.297	0.060	0.694	0.754	0.005	22.766	22.771	0.120	23.702	23.822

Table 6. Lengths of coastline in eastern Canada and St. Pierre and Miquelon, by sector and exposure category. Semi-exposed water bodies are defined using Method 2 (see Methods).

Juris-diction	Sector	Coastline length (km)				Percent of total		
		Sheltered	Semi-exposed	Exposed	Total	Sheltered	Semi-exposed	Exposed
St. Lawrence Estuary								
QC	St. Lawrence Middle Estuary	129	386	12	527	24.5	73.2	2.3
QC	Saguenay Fiord	343	7	0	350	98.0	2.0	0.0
QC	St. Lawrence Lower Estuary	413	153	406	973	42.5	15.8	41.8
Gulf of St. Lawrence								
QC	Gulf North Shore	6,473	466	775	7,713	83.9	6.0	10.0
QC	Gaspé	358	183	442	983	36.4	18.6	45.0
QC	Anticosti	109	35	493	637	17.1	5.5	77.4
QC	Îles-de-la-Madeleine	220	50	167	438	50.3	11.5	38.3
NB	Gulf New Brunswick	1,988	326	405	2,719	73.1	12.0	14.9
NS	Gulf Nova Scotia mainland	893	119	209	1,221	73.2	9.7	17.1
NS	Gulf Cape Breton	143	61	176	379	37.6	16.1	46.3
PEI	Prince Edward Island	1,997	157	476	2,630	75.9	6.0	18.1
NL	Newfoundland West Coast	866	486	559	1,911	45.3	25.4	29.3
Atlantic Ocean and Bay of Fundy								
NL	Nfld Strait of Belle Isle	279	56	98	433	64.5	13.0	22.5
NL	Nfld Northeast Coast	4,650	1,210	558	6,418	72.5	18.8	8.7
NL	Nfld East Coast	3,101	700	476	4,277	72.5	16.4	11.1
NL	Nfld South Coast	4,501	1,105	669	6,276	71.7	17.6	10.7
Fr	St. Pierre and Miquelon (SPM)	76	55	83	214	35.5	25.9	38.6
NS	Atlantic Cape Breton	1,119	323	215	1,657	67.5	19.5	13.0
NS	Bras d'Or Lakes	1,014	144	0	1,158	87.6	12.4	0.0
NS	NS Eastern Shore	2,251	253	235	2,739	82.2	9.3	8.6
NS	NS South Shore	1,781	289	156	2,226	80.0	13.0	7.0
NS	NS Gulf of Maine	998	194	106	1,299	76.9	15.0	8.2
NS	NS Bay of Fundy	706	449	190	1,345	52.5	33.4	14.2
NB	NB Bay of Fundy	1,648	263	190	2,101	78.4	12.5	9.1
Totals by region and jurisdiction								
St. Lawrence Estuary		886	546	418	1,850	47.9	29.5	22.6
Gulf of St. Lawrence		13,047	1,882	3,702	18,631	70.0	10.1	19.9
St. Lawrence Estuary and Gulf		13,933	2,428	4,120	20,481	68.0	11.9	20.1
Quebec-Gulf		7,159	734	1,878	9,771	73.3	7.5	19.2
Quebec-total		8,045	1,280	2,296	11,621	69.2	11.0	19.8
New Brunswick-Gulf		1,988	326	405	2,719	73.1	12.0	14.9
Nova Scotia-Gulf		1,036	180	384	1,600	64.7	11.2	24.0
Prince Edward Island		1,997	157	476	2,630	75.9	6.0	18.1
Maritime Provinces-Gulf		5,021	663	1,265	6,949	72.3	9.5	18.2
Newfoundland-Gulf		866	486	559	1,911	45.3	25.4	29.3
Newfoundland-Atlantic		12,532	3,071	1,801	17,404	72.0	17.6	10.3
Newfoundland-total		13,398	3,557	2,360	19,315	69.4	18.4	12.2
Scotia-Fundy		9,517	1,915	1,093	12,525	76.0	15.3	8.7
Nova Scotia - Atlantic-Fundy		7,869	1,653	903	10,424	75.5	15.9	8.7
Nova Scotia-total		8,904	1,832	1,287	12,024	74.1	15.2	10.7
New Brunswick-total		3,636	589	595	4,820	75.4	12.2	12.3
Newfoundland-Atlantic and SPM		12,608	3,127	1,884	17,618	71.6	17.7	10.7
Atlantic-Fundy, Canadian waters only		22,048	4,986	2,894	29,929	73.7	16.7	9.7
Atlantic-Fundy, including SPM		22,124	5,042	2,977	30,143	73.4	16.7	9.9
Gulf of St. Lawrence and Atlantic-Fundy, Canadian waters only		35,095	6,869	6,596	48,560	72.3	14.1	13.6
Gulf of St. Lawrence and Atlantic-Fundy, including SPM		35,171	6,924	6,679	48,774	72.1	14.2	13.7
St. Lawrence Estuary and Gulf and Atlantic-Fundy, Canadian waters only		35,981	7,415	7,015	50,410	71.4	14.7	13.9
St. Lawrence Estuary and Gulf and Atlantic-Fundy, including SPM		36,057	7,470	7,098	50,624	71.2	14.8	14.0

Table 7. Area of aquatic habitat in 50 km wide transects in the Atlantic Ocean, by exposure category and depth zone. See Fig. 2 for transect locations. Semi-exposed water bodies are defined using Method 2 (see Methods).

Location	Sector	Area (km^2)												
		Sheltered							Semi-exposed					
		Inter-tidal	0-2 m	2-4 m	4-6 m	6-10 m	>10 m	Total	Inter-tidal	0-2 m	2-4 m	4-6 m	6-10 m	>10 m	Total
Bonavista	Nfld. East Coast	4.2	43.0	33.3	25.0	45.1	224.4	375.1	1.9	4.9	9.0	9.3	16.7	601.1	643.0
Percent of total		0.0	0.3	0.2	0.2	0.3	1.6	2.6	0.0	0.0	0.1	0.1	0.1	4.2	4.5
Burgeo	Nfld. South Coast	6.7	11.1	8.6	5.1	8.6	18.6	58.8	0.2	1.1	1.4	1.5	3.4	25.4	32.9
Percent of total		0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Liverpool	NS South Shore	10.4	30.7	14.2	9.3	8.1	2.6	75.3	2.0	4.1	5.0	7.7	17.5	32.9	69.0
Percent of total		0.1	0.3	0.1	0.1	0.1	0.0	0.7	0.0	0.0	0.0	0.1	0.2	0.3	0.7

		Exposed							Total						
		Inter-tidal	0-2 m	2-4 m	4-6 m	6-10 m	>10 m	Total	Inter-tidal	0-2 m	2-4 m	4-6 m	6-10 m	>10 m	Total
Bonavista	Nfld. East Coast	0.0	1.9	2.9	4.9	18.3	13,244.8	13,272.9	6.2	49.9	45.3	39.2	80.2	14,070.3	14,291.0
Percent of total		0.0	0.0	0.0	0.0	0.1	92.7	92.9	0.0	0.3	0.3	0.3	0.6	98.5	100.0
Burgeo	Nfld. South Coast	0.3	0.8	1.5	3.8	9.0	9,816.3	9,831.6	7.2	13.1	11.4	10.4	20.9	9,860.4	9,923.4
Percent of total		0.0	0.0	0.0	0.0	0.1	98.9	99.1	0.1	0.1	0.1	0.1	0.2	99.4	100.0
Liverpool	NS South Shore	1.1	3.5	4.1	5.1	10.6	9,920.8	9,945.2	13.5	38.3	23.2	22.1	36.1	9,956.3	10,089.6
Percent of total		0.0	0.0	0.0	0.1	0.1	98.3	98.6	0.1	0.4	0.2	0.2	0.4	98.7	100.0

Table 8. Number of fishing locations targeting yellow and silver American eels in eastern Canada and St. Pierre and Miquelon, by geographic sector and exposure category. Includes both commercial and recreational fishing locations.

Juris.	Sector	Brackish and salt waters								Fresh waters		All waters
		Sheltered		Semi-exposed		Exposed		Total				
		Number	%[a]	Number	%[a]	Number	%[a]	Number	%[b]	Number	%[b]	Number
St. Lawrence Estuary												
QC	St. Lawrence Middle Est.	3	13.6	19	86.4	0	0.0	22	100.0	0	0.0	22
QC	Saguenay Fiord	0		0		0		0		0		0
QC	St. Lawrence Lower Est.	1	100.0	0	0.0	0	0.0	1	100.0	0	0.0	1
Gulf of St. Lawrence												
QC	Gulf North Shore	0		0		0		0		0		0
QC	Anticosti	0		0		0		0		0		0
QC	Gaspé	0		0		0		0		0		0
QC	Îles-de-la-Madeleine	62	100.0	0	0.0	0	0.0	62	100.0	0	0.0	62
NB	Gulf NB	935	86.3	148	13.7	0	0.0	1,083	98.9	12	1.1	1,095
NS	Gulf NS mainland	150	99.3	1	0.7	0	0.0	151	99.3	1	0.7	152
NS	Gulf NS Cape Breton	44	100.0	0	0.0	0	0.0	44	89.8	5	10.2	49
PEI	PEI	1,559	99.9	0	0.0	2	0.1	1,561	99.9	1	0.1	1,562
NL	Nfld. West Coast	13	92.9	1	7.1	0	0.0	14	87.5	2	12.5	16
Atlantic Ocean and Bay of Fundy												
NL	Nfld. Strait of Belle Isle	0		0		0		0		0		0
NL	Nfld. Northeast Coast	1	20.0	1	20.0	3	60.0	5	83.3	1	16.7	6
NL	Nfld. East Coast	48	94.1	2	3.9	1	2.0	51	85.0	9	15.0	60
NL	Nfld. South Coast	3	75.0	1	25.0	0	0.0	4	100.0	0	0.0	4
Fr	St. Pierre and Miq.	0		0		0		0		0		0
NS	Atlantic Cape Breton	18	69.2	8	30.8	0	0.0	26	89.7	3	10.3	29
NS	Bras d'Or Lakes	11	84.6	2	15.4	0	0.0	13	100.0	0	0.0	13
NS	NS Eastern Shore	14	100.0	0	0.0	0	0.0	14	73.7	5	26.3	19
NS	NS South Shore	29	100.0	0	0.0	0	0.0	29	78.4	8	21.6	37
NS	NS Gulf of Maine	10	90.9	1	9.1	0	0.0	11	47.8	12	52.2	23
NS	NS Bay of Fundy	4	100.0	0	0.0	0	0.0	4	44.4	5	55.6	9
NB	NB Bay of Fundy	6	85.7	1	14.3	0	0.0	7	33.3	14	66.7	21
Totals by region and jurisdiction												
St. Lawrence Estuary		4	17.4	19	82.6	0	0.0	23	100.0	0	0.0	23
Gulf of St. Lawrence		2,763	94.8	150	5.1	2	0.1	2,915	99.3	21	0.7	2,936
St. Lawrence Estuary and Gulf		2,767	94.2	169	5.8	2	0.1	2,938	99.3	21	0.7	2,959
Quebec-Gulf		62	100.0	0	0.0	0	0.0	62	100.0	0	0.0	62
Quebec-total		66	77.6	19	22.4	0	0.0	85	100.0	0	0.0	85
New Brunswick-Gulf		935	86.3	148	13.7	0	0.0	1,083	98.9	12	1.1	1,095
Nova Scotia-Gulf		194	99.5	1	0.5	0	0.0	195	97.0	6	3.0	201
Prince Edward Island		1,559	99.9	0	0.0	2	0.1	1,561	99.9	1	0.1	1,562
Maritime Provinces-Gulf		2,688	94.7	149	5.2	2	0.1	2,839	99.3	19	0.7	2,858
Newfoundland-Gulf		13	92.9	1	7.1	0	0.0	14	87.5	2	12.5	16
Newfoundland-Atlantic		52	86.7	4	6.7	4	6.7	60	85.7	10	14.3	70
Newfoundland-total		65	87.8	5	6.8	4	5.4	74	86.0	12	14.0	86
Nova Scotia - Atlantic-Fundy		86	88.7	11	11.3	0	0.0	97	74.6	33	25.4	130
Scotia-Fundy		92	88.5	12	11.5	0	0.0	104	68.9	47	31.1	151
Nova Scotia-total		280	95.9	12	4.1	0	0.0	292	88.2	39	11.8	331
New Brunswick-total		941	86.3	149	13.7	0	0.0	1,090	97.7	26	2.3	1,116
Atlantic-Fundy		144	87.8	16	9.8	4	2.4	164	74.2	57	25.8	221
Gulf of St. Lawrence and Atlantic-Fundy		2,907	94.4	166	5.4	6	0.2	3,079	97.5	78	2.5	3,157
Canada		2,911	93.8	185	6.0	6	0.2	3,102	97.5	78	2.5	3,180

[a]Percent of locations in brackish and salt waters

[b]Percent of locations in all waters

Table 9. Areas of aquatic habitat in eastern Canada and St. Pierre and Miquelon that are within 1 km and within 5 km of commercial eel fishing locations, by exposure category. Eel fishing locations include those targetting elvers, yellow eels, and silver eels.

Juris.	Sector	Areas																			
		Sheltered zone					Semi-exposed zone					Exposed zone					All zones				
		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site	
			km^2	%	km^2	%		km^2	%	km^2	%		km^2	%	km^2	%		km^2	%	km^2	%
St. Lawrence Estuary																					
QC	St. Lawrence Middle Est.	30.3	2.0	6.6	9.9	32.8	2,351.1	24.9	1.1	319.7	13.6	180.5	0.0	0.0	0.0	0.0	2,561.9	26.9	1.1	329.6	12.9
QC	Saguenay Fiord	304.5	0.0	0.0	0.0	0.0	0.0	0.0		0.0		11.1	0.0	0.0	0.0	0.0	315.6	0.0	0.0	0.0	0.0
QC	St. Lawrence Lower Est.	84.4	0.2	0.2	0.5	0.6	325.8	0.0	0.0	0.0	0.0	8,549.5	1.4	0.0	37.6	0.4	8,959.7	1.5	0.0	38.2	0.4
Gulf of St. Lawrence																					
QC	Gulf North Shore	1,317.0	0.0	0.0	0.0	0.0	1,198.2	0.0	0.0	0.0	0.0	43,735.8	0.0	0.0	0.0	0.0	46,250.9	0.0	0.0	0.0	0.0
QC	Gaspé	89.8	0.0	0.0	0.0	0.0	529.4	0.0	0.0	0.0	0.0	21,186.2	0.0	0.0	0.0	0.0	21,805.4	0.0	0.0	0.0	0.0
QC	Anticosti	11.5	0.0	0.0	0.0	0.0	49.3	0.0	0.0	0.0	0.0	33,969.0	0.0	0.0	0.0	0.0	34,029.8	0.0	0.0	0.0	0.0
QC	Îles-de-la-Madeleine	138.0	13.9	10.1	82.2	59.5	224.7	2.0	0.9	59.2	26.3	29,013.9	6.4	0.0	211.8	0.7	29,376.6	22.3	0.1	353.1	1.2
NB	Gulf NB	459.7	173.6	37.8	339.0	73.7	815.4	68.1	8.3	328.4	40.3	12,980.4	19.1	0.1	439.2	3.4	14,255.5	260.8	1.8	1,106.6	7.8
NS	Gulf NS mainland	188.2	59.3	31.5	130.5	69.3	292.0	7.2	2.5	87.2	29.9	3,652.0	7.2	0.2	233.2	6.4	4,132.2	73.7	1.8	450.9	10.9
NS	Gulf Cape Breton	24.9	6.9	27.8	17.9	71.7	115.7	0.9	0.8	40.5	35.0	10,503.2	3.2	0.0	139.5	1.3	10,643.8	11.0	0.1	197.9	1.9
PEI	Prince Edward Island	567.3	222.6	39.2	434.7	76.6	440.1	3.7	0.8	106.4	24.2	21,659.7	26.3	0.1	778.2	3.6	22,667.0	252.6	1.1	1,319.2	5.8
NL	Nfld. West Coast	291.2	9.0	3.1	76.2	26.2	1,271.6	6.0	0.5	85.9	6.8	34,756.6	2.1	0.0	80.9	0.2	36,319.5	17.1	0.0	243.0	0.7
Atlantic Ocean and Bay of Fundy																					
NL	Nfld. Strait of Belle Isle	66.4	0.0	0.0	0.0	0.0	155.8	0.0	0.0	0.0	0.0	1,832.3	0.0	0.0	0.0	0.0	2,054.5	0.0	0.0	0.0	0.0
NL	Nfld. Northeast Coast	1,161.3	2.0	0.2	30.1	2.6	3,326.5	1.5	0.0	54.6	1.6	89,236.1	3.9	0.0	88.8	0.1	93,723.9	7.4	0.0	173.5	0.2
NL	Nfld. East Coast	1,023.9	23.2	2.3	194.8	19.0	1,790.2	8.8	0.5	318.4	17.8	204,065.4	1.4	0.0	136.6	0.1	206,879.5	33.4	0.0	649.8	0.3
NL	Nfld. South Coast	1,152.9	4.5	0.4	56.0	4.9	3,387.7	1.5	0.0	42.1	1.2	147,604.6	0.0	0.0	27.2	0.0	152,145.2	6.0	0.0	125.2	0.1
Fr	St. Pierre and Miq. (SPM)	21.8	0.0	0.0	0.0	0.0	131.0	0.0	0.0	0.0	0.0	9,429.0	0.0	0.0	0.0	0.0	9,581.8	0.0	0.0	0.0	0.0
NS	Atlantic Cape Breton	214.9	19.1	8.9	91.5	42.6	840.4	20.4	2.4	278.7	33.2	41,364.4	1.0	0.0	131.5	0.3	42,419.6	40.6	0.1	501.8	1.2
NS	Bras d'Or Lakes	491.5	9.9	2.0	130.6	26.6	578.1	3.2	0.6	133.5	23.1	0.0	0.0		0.0		1,069.6	13.1	1.2	264.2	24.7
NS	NS Eastern Shore	507.8	17.7	3.5	195.4	38.5	753.6	0.7	0.1	79.8	10.6	72,225.8	0.0	0.0	70.6	0.1	73,487.2	18.4	0.0	345.8	0.5
NS	NS South Shore	417.9	27.5	6.6	229.5	54.9	797.8	2.8	0.4	224.5	28.1	49,564.6	1.0	0.0	112.4	0.2	50,780.4	31.3	0.1	566.4	1.1
NS	NS Gulf of Maine	232.7	8.8	3.8	90.6	38.9	635.2	2.6	0.4	94.0	14.8	31,762.8	1.2	0.0	50.2	0.2	32,630.7	12.6	0.0	234.8	0.7
NS	NS Bay of Fundy	196.3	4.2	2.1	61.3	31.2	2,294.9	0.1	0.0	143.3	6.2	5,594.3	1.1	0.0	33.7	0.6	8,085.4	5.3	0.1	238.2	2.9
NB	NB Bay of Fundy	654.2	11.0	1.7	136.7	20.9	988.0	2.7	0.3	141.2	14.3	7,444.2	3.6	0.0	169.7	2.3	9,086.3	17.3	0.2	447.6	4.9

Table 9 (continued)

Prov./ Sector terr.	Areas																			
	Sheltered zone					Semi-exposed zone					Exposed zone					All zones				
	Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site		Total km^2	Within 1 km of a fishing site		Within 5 km of a fishing site	
		km^2	%	km^2	%		km^2	%	km^2	%		km^2	%	km^2	%		km^2	%	km^2	%
Totals by region and jurisdiction																				
St. Lawrence Estuary	419.1	2.2	0.5	10.5	2.5	2,676.9	24.9	0.9	319.7	11.9	8,741.1	1.4	0.0	37.6	0.4	11,837.1	28.5	0.2	367.8	3.1
Gulf of St. Lawrence	3,087.6	485.2	15.7	1,080.5	35.0	4,936.3	88.0	1.8	707.5	14.3	211,456.9	64.4	0.0	1,882.7	0.9	219,480.7	637.6	0.3	3,670.7	1.7
St. Lawrence Estuary and Gulf	3,506.7	487.4	13.9	1,090.9	31.1	7,613.2	112.9	1.5	1,027.2	13.5	220,198.0	65.8	0.0	1,920.4	0.9	231,317.9	666.1	0.3	4,038.5	1.7
Quebec-Gulf	1,556.3	13.9	0.9	82.2	5.3	2,001.5	2.0	0.1	59.2	3.0	127,904.9	6.4	0.0	211.8	0.2	131,462.7	22.3	0.0	353.1	0.3
Quebec-total	1,975.4	16.0	0.8	92.7	4.7	4,678.4	27.0	0.6	378.8	8.1	136,646.0	7.8	0.0	249.4	0.2	143,299.8	50.8	0.0	720.9	0.5
New Brunswick-Gulf	459.7	173.6	37.8	339.0	73.7	815.4	68.1	8.3	328.4	40.3	12,980.4	19.1	0.1	439.2	3.4	14,255.5	260.8	1.8	1,106.6	7.8
Nova Scotia-Gulf	213.1	66.2	31.1	148.4	69.6	407.7	8.1	2.0	127.7	31.3	14,155.3	10.4	0.1	372.8	2.6	14,776.1	84.8	0.6	648.8	4.4
Prince Edward Island	567.3	222.6	39.2	434.7	76.6	440.1	3.7	0.8	106.4	24.2	21,659.7	26.3	0.1	778.2	3.6	22,667.0	252.6	1.1	1,319.2	5.8
Maritime Provinces-Gulf	1,240.1	462.4	37.3	922.0	74.4	1,663.2	79.9	4.8	562.5	33.8	48,795.4	55.8	0.1	1,590.1	3.3	51,698.6	598.1	1.2	3,074.6	5.9
Newfoundland-Gulf	291.2	9.0	3.1	76.2	26.2	1,271.6	6.0	0.5	85.9	6.8	34,756.6	2.1	0.0	80.9	0.2	36,319.5	17.1	0.0	243.0	0.7
Newfoundland-Atlantic	3,404.5	29.7	0.9	280.8	8.2	8,660.2	11.8	0.1	415.2	4.8	442,738.5	5.3	0.0	252.7	0.1	454,803.1	46.8	0.0	948.6	0.2
Newfoundland-total	3,695.7	38.7	1.0	357.0	9.7	9,931.8	17.8	0.2	501.0	5.0	477,495.1	7.4	0.0	333.5	0.1	491,122.6	63.9	0.0	1,191.5	0.2
Scotia-Fundy	2,715.2	98.1	3.6	935.6	34.5	6,888.1	32.5	0.5	1,095.0	15.9	207,956.1	7.9	0.0	568.1	0.3	217,559.4	138.6	0.1	2,598.7	1.2
Nova Scotia - Atlantic-Fundy	2,061.1	87.1	4.2	798.9	38.8	5,900.1	29.8	0.5	953.8	16.2	200,512.0	4.3	0.0	398.4	0.2	208,473.1	121.2	0.1	2,151.1	1.0
Nova Scotia-total	2,274.2	153.3	6.7	947.3	41.7	6,307.8	37.9	0.6	1,081.5	17.1	214,667.2	14.7	0.0	771.2	0.4	223,249.2	206.0	0.1	2,800.0	1.3
New Brunswick-total	1,113.8	184.6	16.6	475.7	42.7	1,803.4	70.8	3.9	469.6	26.0	20,424.6	22.8	0.1	608.9	3.0	23,341.8	278.1	1.2	1,554.2	6.7
Newfoundland-Atlantic and SPM	3,426.3	29.7	0.9	280.8	8.2	8,791.1	11.8	0.1	415.2	4.7	452,167.5	5.3	0.0	252.7	0.1	464,385.0	46.8	0.0	948.6	0.2
Atlantic-Fundy, Canadian waters only	6,119.7	127.8	2.1	1,216.4	19.9	15,548.2	44.3	0.3	1,510.1	9.7	650,694.6	13.2	0.0	820.8	0.1	672,362.5	185.3	0.0	3,547.3	0.5
Atlantic-Fundy, including SPM	6,141.6	127.8	2.1	1,216.4	19.8	15,679.2	44.3	0.3	1,510.1	9.6	660,123.6	13.2	0.0	820.8	0.1	681,944.4	185.3	0.0	3,547.3	0.5
Gulf of St. Law. and Atlantic-Fundy, Canadian waters only	9,207.3	613.0	6.7	2,296.9	24.9	20,484.5	132.3	0.6	2,217.7	10.8	862,151.5	77.6	0.0	2,703.5	0.3	891,843.3	822.9	0.1	7,218.1	0.8
Gulf of St. Law. and Atlantic-Fundy, including SPM	9,229.1	613.0	6.6	2,296.9	24.9	20,615.5	132.3	0.6	2,217.7	10.8	871,580.5	77.6	0.0	2,703.5	0.3	901,425.1	822.9	0.1	7,218.1	0.8
St. Law. Estuary and Gulf and Atlantic-Fundy, Canadian waters only	9,626.4	615.2	6.4	2,307.3	24.0	23,161.5	157.3	0.7	2,537.3	11.0	870,892.5	79.0	0.0	2,741.1	0.3	903,680.4	851.4	0.1	7,585.8	0.8
St. Law. Estuary and Gulf and Atlantic-Fundy, including SPM	9,648.2	615.2	6.4	2,307.3	23.9	23,292.4	157.3	0.7	2,537.3	10.9	880,321.6	79.0	0.0	2,741.1	0.3	913,262.2	851.4	0.1	7,585.8	0.8

Table 10. Reported landings of yellow and silver American eels in the Gulf of St. Lawrence, the Atlantic-Fundy region, and St. Pierre and Miquelon, in 2000-2009. Landings are given by county in the Maritime Provinces, by Statistical District in Newfoundland, and by sector elsewhere. Empty cells indicate that no data are available.

Juris.	Sector, County, or Statistical District	Sector/Region	Reported landings of yellow and silver eels (t)									
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Gulf of St. Lawrence												
QC	Gulf North Shore	Gulf North Shore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Gaspé	Gaspé	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Anticosti	Anticosti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Îles-de-la-Madeleine	Îles-de-la-Madeleine								4.0		
NB	Restigouche Co.	Gulf NB	0.0	0.0	0.0	0.1	0.0	1.5	1.6	0.0	4.4	0.0
	Gloucester Co.	Gulf NB	44.4	58.2	59.5	67.2	55.2	45.1	45.9	52.1	46.5	41.9
	Northumberland Co.	Gulf NB	6.8	11.0	16.3	24.2	36.3	22.3	26.4	29.5	24.1	24.4
	Kent Co.	Gulf NB	21.9	19.9	50.8	36.1	22.8	25.0	21.1	25.0	18.7	19.4
	Westmoreland Co. Gulf	Gulf NB	3.2	3.1	2.3	11.9	8.8	8.3	5.5	8.9	5.5	26.8
NS	Cumberland Co. Gulf	Gulf NS mainland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Colchester Co. Gulf	Gulf NS mainland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Pictou Co.	Gulf NS mainland	0.1	0.1	0.4	1.1	0.5	1.8	1.0	1.5	0.7	0.4
	Antigonish Co.	Gulf NS mainland	2.0	0.2	0.9	3.6	2.5	1.4	2.7	2.6	5.3	0.0
	Inverness Co. Gulf	Gulf NS Cape Breton	4.7	3.1	2.9	4.4	1.3	3.8	6.2	5.2	5.2	0.8
PEI	Prince Co. North[a]	PEI	27.4	21.7	29.6	24.1	27.2	27.1	24.8	25.2	14.1	19.4
	Queens Co. North[b]	PEI	13.2	9.2	18.5	12.6	12.3	22.1	29.1	27.0	22.2	24.0
	Kings Co. North[c]	PEI	11.2	0.6	18.7	13.0	10.5	13.6	15.5	20.1	6.1	9.8
	Kings Co. South[d]	PEI	4.0	4.0	12.6	8.0	4.5	1.5	6.4	7.3	0.6	2.0
	Queens Co. South[e]	PEI	0.8	0.2	0.2	1.2	0.4	0.2	0.2	0.2	0.1	0.4
	Prince Co. South[f]	PEI	6.8	5.6	6.9	12.4	14.1	17.0	11.5	14.7	1.3	3.7
NL	K	Nfld. West Coast	1.4	4.1	16.6	14.4	13.8	14.2	14.2	14.8	17.4	10.0
	L	Nfld. West Coast	0.0	0.0	0.0	10.2	0.0	0.0	0.0	0.0	0.0	0.0
	M	Nfld. West Coast	13.0	1.6	9.4	13.5	9.9	13.3	10.1	8.8	6.2	8.2
	N-Gulf[g]	Nfld. West Coast	4.3	0.9	4.1	4.3	4.2	4.6	17.1	6.7	2.4	4.8
Atlantic Ocean and Bay of Fundy												
NL	N-Atlantic[g]	Nfld. Strait of Belle Isle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	A	Nfld. Northeast Coast	7.4	0.3	1.5	0.4	0.8	0.5	0.0	0.0	0.1	0.0
	B	Nfld. Northeast Coast	11.6	8.4	8.8	14.3	14.8	11.3	10.5	12.6	12.2	11.0
	C	Nfld. East Coast	16.6	9.6	12.7	5.6	7.6	9.2	8.8	8.0	0.7	1.4
	D	Nfld. East Coast	3.7	2.0	1.3	1.6	0.9	1.2	3.1	2.0	0.4	0.9
	E	Nfld. East Coast	4.7	4.7	6.4	9.2	3.1	7.6	8.7	8.1	4.5	3.9
	F	Nfld. East Coast	0.7	0.1	0.9	0.0	0.0	0.0	0.0	0.8	0.0	0.0
	G	Nfld. South Coast	0.8	0.9	0.3	1.0	0.3	0.4	0.9	0.6	0.3	0.7
	H	Nfld. South Coast	2.8	0.8	0.0	0.7	1.3	2.1	2.6	0.9	1.4	0.3
	I	Nfld. South Coast	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	J	Nfld. South Coast	2.8	3.3	3.5	0.4	7.2	3.4	3.4	2.6	0.0	0.0
Fr	St. Pierre and Miq. (SPM)	St. Pierre and Miquelon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NS	Victoria Co.	Atlantic Cape Breton, Bras d'Or Lakes	4.4	1.0	0.1	3.0	1.9	5.6	2.5	2.3		0.0
	Cape Breton Co.	Atlantic Cape Breton, Bras d'Or Lakes	3.9	9.2	12.2	4.7	8.2	3.4	6.0	7.8		10.6
	Richmond Co.	Atlantic Cape Breton, Bras d'Or Lakes	4.2	1.2	0.9	1.7	2.5	2.6	2.0	4.0		0.5
	Inverness Co. Atlantic	Atlantic Cape Breton, Bras d'Or Lakes	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
	Guysborough Co.	NS Eastern Shore	2.3	4.6	3.6	1.1	3.6	4.0	1.7	0.3		0.5
	Halifax Co.	NS Eastern Shore, NS South Shore	8.8	12.3	1.1	6.5	8.4	4.7	4.1	4.8		3.2
	Lunenburg Co.	NS South Shore	9.1	8.8	6.4	3.8	11.8	3.4	9.9	1.9		1.5
	Queens Co.	NS South Shore	15.0	10.3	6.7	1.5	7.0	5.7	11.2	2.8		0.0

Table 10 (continued)

Juris.	Sector, County, or Statistical District	Sector	Reported landings of yellow and silver eels (t)								
			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
NS	Shelburne Co.	NS South Shore, NS Gulf of Maine	1.8	2.9	3.3	1.3	2.3	1.2	0.3	0.3		0.0
	Yarmouth Co.	NS Gulf of Maine	22.5	9.0	8.0	6.6	7.6	12.4	13.6	1.3		0.3
	Digby Co.	NS Gulf of Maine, NS Bay of Fundy	5.7	0.5	3.3	2.6	0.7	0.1	2.8	0.0		0.6
	Annapolis Co.	NS Bay of Fundy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
	Kings Co.	NS Bay of Fundy	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
	Hants Co.	NS Bay of Fundy	3.7	0.8	0.0	0.0	0.0	0.3	1.5	0.0		0.0
	Colchester Co. Fundy	NS Bay of Fundy	0.0	0.3	0.6	0.7	0.5	0.0	0.0	0.0		0.1
	Cumberland Co. Fundy	NS Bay of Fundy	8.5	7.6	6.1	1.0	3.2	2.8	9.1	2.5		0.0
NB	Westmoreland Co. Fundy	NB Bay of Fundy	0.3	1.6	2.8	0.1	0.1	2.6	3.0	2.4		0.0
	Albert Co.	NB Bay of Fundy	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
	Saint John Co.	NB Bay of Fundy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
	Kings Co.	NB Bay of Fundy	4.4	22.1	4.4	0.0	0.0	1.8	2.2	0.0		0.0
	Queens Co.	NB Bay of Fundy	18.6	12.4	13.2	13.1	14.6	31.2	26.7	14.3		0.0
	Sunbury Co.	NB Bay of Fundy	29.8	21.5	30.2	17.3	22.7	9.8	12.7	3.9		0.0
	York Co.	NB Bay of Fundy	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
	Charlotte Co.	NB Bay of Fundy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Totals by region and jurisdiction												
	Gulf of St. Lawrence									253.5		
	Quebec-Gulf									4.0		
	New Brunswick-Gulf		76.4	92.2	129.0	139.6	123.1	102.3	100.5	115.5	99.2	112.5
	Nova Scotia-Gulf		6.9	3.4	4.2	9.1	4.4	7.0	9.9	9.3	11.2	1.1
	Prince Edward Island		63.5	41.2	86.4	71.3	69.0	81.5	87.4	94.4	44.4	59.3
	Maritime Provinces-Gulf		146.7	136.8	219.6	219.9	196.5	190.8	197.9	219.3	154.8	173.0
	Newfoundland-Gulf		18.7	6.6	30.0	42.5	27.9	32.1	41.3	30.3	25.9	22.9
	Newfoundland-Atlantic		51.1	30.1	35.5	33.3	36.2	35.8	38.6	35.8	19.5	18.1
	Newfoundland-total		69.8	36.7	65.5	75.8	64.1	67.9	80.0	66.0	45.5	41.1
	Scotia-Fundy		145.4	126.0	102.9	65.5	95.1	91.6	109.3	48.6		17.3
	Nova Scotia - Atlantic-Fundy		90.0	68.5	52.3	35.0	57.7	46.2	64.7	28.1		17.3
	Nova Scotia-total		96.9	71.9	56.4	44.1	62.0	53.2	74.6	37.4		18.5
	New Brunswick-Fundy		55.3	57.6	50.6	30.5	37.4	45.3	44.6	20.6		0.0
	New Brunswick-total		131.7	149.8	179.6	170.1	160.5	147.6	145.1	136.1		112.5
	Newfoundland-Atlantic and SPM		51.1	30.1	35.5	33.3	36.2	35.8	38.6	35.8	19.5	18.1
	Atlantic-Fundy, Canadian waters only		196.4	156.1	138.4	98.8	131.3	127.3	148.0	84.4		35.5
	Atlantic-Fundy, including SPM		196.4	156.1	138.4	98.8	131.3	127.3	148.0	84.4		35.5
	Gulf of St. Law. and Atlantic-Fundy, Can. waters only									337.9		
	Gulf of St. Law. and Atlantic-Fundy, including SPM									337.9		

[a]DFO Statistical Districts 92 and 93

[b]DFO Statistical Districts 95 and 96

[c]DFO Statistical District 88

[d]DFO Statistical District 87

[e]DFO Statistical Districts 85 and 86

[f]DFO Statistical Districts 82 and 83

[g]Landings statistics do not provide a breakdown between the Gulf of St. Lawrence and the Strait of Belle Isle portions of District N. Based on the distribution of fishing effort (Table 10), landings for District N are assigned to the Gulf of St. Lawrence.

Table 11. Number of fisheries locations, mean annual landings, areas of Sheltered Zones, and mean harvest rate of yellow and silver American eels in Sheltered Zones in the Gulf of St. Lawrence, the Atlantic-Fundy region, and St. Pierre and Miquelon, in 2000-2009.

Juris.	Sector, County, or Statistical District	Sector/Region	Locations of commercial yellow and silver eel fisheries			Mean annual landings (t), 2000-2009		Sheltered area (km^2)			Mean harvest rate in Sheltered Zone ($kg/km^2/yr$)
			Number within Sheltered Zone	Total	Percent within Sheltered Zone[a]	Total	Within Sheltered Zone[b]	Inter-tidal	Sub-tidal	Total[c]	
Gulf of St. Lawrence											
QC	Gulf North Shore	Gulf North Shore	0	0		0.0	0.0	246.2	1,070.8	1,193.9	0.0
	Gaspé	Gaspé	0	0		0.0	0.0	39.1	50.7	70.2	0.0
	Anticosti	Anticosti	0	0		0.0	0.0	7.7	3.8	7.7	0.0
	Îles-de-la-Madeleine	Îles-de-la-Madeleine	59	59	100.0	4.0	4.0	25.3	112.7	125.4	31.9
NB	Restigouche Co.	Gulf NB	0	0	85.8	0.8	0.7	2.5	13.3	14.5	45.5
	Gloucester Co.	Gulf NB	375	375	100.0	51.6	51.6	46.2	129.8	152.9	337.5
	Northumberland Co.	Gulf NB	390	534	73.0	22.1	16.2	2.0	93.3	94.4	171.3
	Kent Co.	Gulf NB	102	102	100.0	26.1	26.1	15.8	113.3	121.2	215.2
	Westmoreland Co. Gulf	Gulf NB	4	4	100.0	8.4	8.4	18.9	24.6	34.0	248.4
NS	Cumberland Co. Gulf	Gulf NS mainland	7	7	100.0	0.0	0.0	35.4	12.7	30.4	0.0
	Colchester Co. Gulf	Gulf NS mainland	0	0		0.0	0.0	7.0	4.2	7.7	0.0
	Pictou Co.	Gulf NS mainland	36	38	94.7	0.8	0.7	22.3	70.1	81.3	9.0
	Antigonish Co.	Gulf NS mainland	107	107	100.0	2.1	2.1	9.0	26.7	31.1	67.7
	Inverness Co. Gulf	Gulf NS Cape Breton	44	49	89.8	3.8	3.4	1.5	23.3	24.0	140.3
PEI	Prince Co. North[a]	PEI	579	579	100.0	24.1	24.1	76.4	195.9	234.1	102.8
	Queens Co. North[b]	PEI	560	560	100.0	19.0	19.0	19.2	48.8	58.3	325.9
	Kings Co. North[c]	PEI	288	288	100.0	11.9	11.9	19.9	39.1	49.1	242.7
	Kings Co. South[d]	PEI	64	64	100.0	5.1	5.1	11.8	29.1	35.0	145.4
	Queens Co. South[e]	PEI	6	6	100.0	0.4	0.4	48.4	48.8	73.0	5.3
	Prince Co. South[f]	PEI	22	24	91.7	9.4	8.6	19.0	18.0	27.5	313.3
NL	K	Nfld. West Coast	8	9	88.9	12.1	10.7	9.5	42.1	46.8	229.7
	L	Nfld. West Coast	0	0	81.3	1.0	0.8	4.6	41.2	43.4	19.1
	M	Nfld. West Coast	3	4	75.0	9.4	7.0	14.7	132.9	140.2	50.2
	N-Gulf[g]	Nfld. West Coast	2	3	66.7	5.3	3.6	9.7	36.7	41.5	85.6
Atlantic Ocean and Bay of Fundy											
NL	N-Atlantic[g]	Nfld. Strait of Belle Isle	0	0		0.0	0.0	1.1	8.7	9.3	0.0
NL	A	Nfld. Northeast Coast	0	0	16.7	1.1	0.2	21.2	368.8	379.4	0.5
	B	Nfld. Northeast Coast	1	6	16.7	11.6	1.9	23.7	804.1	816.0	2.4
NL	C	Nfld. East Coast	13	14	92.9	8.0	7.5	11.4	607.5	613.2	12.2
	D	Nfld. East Coast	19	22	86.4	1.7	1.5	2.5	287.4	288.7	5.1
	E	Nfld. East Coast	16	24	66.7	6.1	4.1	0.1	67.4	67.5	60.2
	F	Nfld. East Coast	0	0	80.0	0.3	0.2	0.0	47.5	47.6	4.4
NL	G	Nfld. South Coast	3	4	75.0	0.6	0.5	1.9	62.4	63.3	7.4
	H	Nfld. South Coast	0	0	75.0	1.3	1.0	4.8	386.2	388.6	2.5
	I	Nfld. South Coast	0	0	75.0	0.1	0.0	1.1	194.4	195.0	0.2
	J	Nfld. South Coast	0	0	75.0	2.7	2.0	10.9	491.1	496.6	4.0
Fr	St. Pierre and Miquelon	St. Pierre and Miquelon	0	0		0.0	0.0	5.4	16.4	19.1	0.0
NS	Victoria Co.	Atlantic Cape Breton, Bras d'Or Lakes	3	3	100.0	2.3	2.3	5.2	266.9	269.5	8.6
	Cape Breton Co.	Atlantic Cape Breton, Bras d'Or Lakes	13	23	56.5	7.4	4.2	4.5	194.8	197.1	21.1
	Richmond Co.	Atlantic Cape Breton, Bras d'Or Lakes	13	16	81.3	2.2	1.8	24.4	117.2	129.4	13.7
	Inverness Co. Atlantic	Atlantic Cape Breton, Bras d'Or Lakes	0	0		0.0	0.0	0.6	92.8	93.1	0.0
	Guysborough Co.	NS Eastern Shore	7	8	87.5	2.4	2.1	23.2	158.9	170.5	12.3
	Halifax Co.	NS Eastern Shore, NS South Shore	8	12	66.7	6.0	4.0	103.4	298.0	349.7	11.4
	Lunenburg Co.	NS South Shore	20	25	80.0	6.3	5.0	13.8	137.0	143.9	35.0
	Queens Co.	NS South Shore	6	8	75.0	6.7	5.0	11.1	50.0	55.5	90.3

Table 11 (continued)

Juris.	Sector, County, or Statistical District	Sector	Locations of commercial yellow and silver eel fisheries			Mean annual landings (t), 2000-2009		Sheltered area (km^2)			Mean harvest rate in Sheltered Zone ($kg/km^2/yr$)
			Number within Sheltered Zone	Total	Percent within Sheltered Zone[a]	Total	Within Sheltered Zone	Inter-tidal	Sub-tidal	Total[b]	
	Shelburne Co.	NS South Shore, NS Gulf of Maine	3	5	60.0	1.5	0.9	45.5	116.9	139.6	6.7
	Yarmouth Co.	NS Gulf of Maine	7	18	38.9	9.0	3.5	87.5	101.7	145.5	24.2
	Digby Co.	NS Gulf of Maine, NS Bay of Fundy	2	3	66.7	1.8	1.2	9.1	32.5	37.0	32.7
	Annapolis Co.	NS Bay of Fundy	0	0	66.2	0.0	0.0	19.4	51.2	60.9	0.1
	Kings Co.	NS Bay of Fundy	0	1	0.0	0.0	0.0	12.4	3.1	9.3	0.0
	Hants Co.	NS Bay of Fundy	0	2	0.0	0.7	0.0	19.0	7.9	17.3	0.0
	Colchester Co. Fundy	NS Bay of Fundy	0	0	66.2	0.2	0.2	14.9	6.2	13.7	12.0
	Cumberland Co. Fundy	NS Bay of Fundy	4	6	66.7	4.5	3.0	25.1	7.0	19.5	154.2
NB	Westmoreland Co. Fundy	NB Bay of Fundy	4	7	57.1	1.4	0.8	13.7	19.0	25.9	31.5
	Albert Co.	NB Bay of Fundy	0	0	28.6	0.0	0.0	7.5	17.2	20.9	0.3
	Saint John Co.	NB Bay of Fundy	2	2	100.0	0.0	0.0	22.6	50.0	61.3	0.0
	Kings Co.	NB Bay of Fundy	0	0	28.6	3.9	1.1	0.1	148.1	148.2	7.5
	Queens Co.	NB Bay of Fundy	0	9	0.0	16.0	0.0	0.0	0.0	0.0	
	Sunbury Co.	NB Bay of Fundy	0	3	0.0	16.4	0.0	0.0	0.0	0.0	
	York Co.	NB Bay of Fundy	0	0	0.0	0.2	0.0	0.0	0.0	0.0	
	Charlotte Co.	NB Bay of Fundy	0	0		0.0	0.0	36.9	333.1	351.5	0.0
	Totals by region and jurisdiction										
	Gulf of St. Lawrence		2,656	2,812	94.5	217.4	204.4	712.0	2,381.6	2,737.6	74.7
	Quebec-Gulf		59	59	100.0	4.0	4.0	318.4	1,237.9	1,397.1	2.9
	New Brunswick-Gulf		871	1,015	85.8	109.0	103.0	85.4	374.3	417.0	246.9
	Nova Scotia-Gulf		194	201	96.5	6.6	6.2	75.1	137.0	174.5	35.6
	Prince Edward Island		1,519	1,521	99.9	69.8	69.1	194.7	379.6	476.9	144.8
	Maritime Provinces-Gulf		2,584	2,737	94.4	185.5	178.2	355.2	890.9	1,068.5	166.8
	Newfoundland-Gulf		13	16	81.3	27.8	22.2	38.5	252.8	272.0	81.5
	Newfoundland-Atlantic		52	70	74.3	33.4	18.8	78.9	3,325.6	3,365.0	5.6
	Newfoundland-total		65	86	75.6	61.2	41.0	117.3	3,578.3	3,637.0	11.3
	Scotia-Fundy		92	151	60.9	89.1	35.1	499.9	2,209.4	2,459.3	14.3
	Nova Scotia - Atlantic-Fundy		86	130	66.2	51.1	33.2	419.1	1,642.0	1,851.6	17.9
	Nova Scotia-total		280	331	84.6	57.7	39.4	494.2	1,779.0	2,026.1	19.5
	New Brunswick-Fundy		6	21	28.6	38.0	1.9	80.8	567.4	607.8	3.2
	New Brunswick-total		877	1,036	84.7	147.0	104.9	166.2	941.7	1,024.8	102.4
	Newfoundland-Atlantic and SPM		52	70	74.3	33.4	18.8	84.3	3,342.0	3,384.1	5.6
	Atlantic-Fundy, Canadian waters only		144	221	65.2	122.5	53.9	578.8	5,534.9	5,824.3	9.3
	Atlantic-Fundy, including SPM		144	221	65.2	122.5	53.9	584.2	5,551.4	5,843.5	9.2
	Gulf of St. Law. and Atlantic-Fundy, Can. waters only		2,800	3,033	92.3	339.8	258.4	1,290.8	7,916.5	8,561.9	30.2
	Gulf of St. Law. and Atlantic-Fundy, including SPM		2,800	3,033	92.3	339.8	258.4	1,296.3	7,932.9	8,581.1	30.1

[a]Where no fishing locations are reported in a County or Statistical District, the percent of fishing locations within the Sheltered Zone is calculated from fishing locations elsewhere in the sector

[b]Calculated as (proportion of commercial yellow and silver eel fishing locations that are within the Sheltered Zone) x (total mean annual landings)

[c]Calculated as (intertidal area/2) + subtidal area

Table 12. Area of Sheltered zone by category of eel harvest rate, by region.

Region	Area of Sheltered zone (km^2) with harvest rate of										Total
	0		0.1-9.9		10-49.9		50-99.9		100-350		
	$kg/km^2/yr$	%	$kg/km^2/yr$	%	$kg/km^2/yr$	%	$kg/km^2/yr$	%	$kg/km^2/yr$	%	
Quebec	1,271.8	91.0	0.0	0.0	125.4	9.0	0.0	0.0	0.0	0.0	1,397.1
Gulf Maritimes	38.1	3.6	154.2	14.4	14.5	1.4	31.1	2.9	830.5	77.7	1,068.5
West Coast Newfoundland	0.0	0.0	0.0	0.0	43.4	16.0	181.8	66.8	46.8	17.2	272.0
Atlantic Newfoundland	9.3	0.3	2,675.0	79.5	613.2	18.2	67.5	2.0	0.0	0.0	3,365.0
St. Pierre and Miquelon	19.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1
Scotia-Fundy	532.5	21.7	639.1	26.0	1,212.6	49.3	55.5	2.3	19.5	0.8	2,459.3
Total	1,870.8	21.8	3,468.4	40.4	2,009.2	23.4	335.9	3.9	896.8	10.5	8,581.1

Table 13. Surveys in waters of the east coast of Canada, with notes on American eel catches.

Survey area	Method and habitat	Timing	Comments	Source
St. Lawrence Estuary, between Île d'Orléans and Île-aux-Oies.	Bottom trawl, near limit of brackish water, depths 5-25 m. 197 sets.	summer and fall, 2000-2001	10 eels were caught. Although fishing occured througout the summer and fall, all eels were caught in late August (1) or September (9). This suggests that the captured eels were migrating silvers..	Caron et al. 2001, Fournier 2002
St. Lawrence Middle and Lower Estuaries, lower portion of the Saguenay Fiord	Bottom beam trawl surveys, depths 8-335 m	2004-2008	No eels were recorded	Dutil et al. 2009b
St. Lawrence Lower Estuary, NAFO zone 4Tpq (whose eastern boundary extends slightly east of the eastern boundary of the Lower Estuary)	Compilation of records from publications and reports, from DFO groundfish and shrimp surveys, and from observers on commercial vessels	Covers records from 1930 to 2005	Eels were recorded in literature and observer reports, but not in groundfish and shrimp surveys. Observer reports for the Lower Estuary and NAFO zones 4Tpq indicate total eel landings of 4 kg.	Scallon-Chouinard et al. 2007
St. Lawrence Estuary and the northern Gulf of St. Lawrence, including the Laurentian Channel	Bottom otter trawl surveys, depths 23-427 m. 11,225 sets.	Series started in 1985. Surveys generally conducted in late summer	1 eel was recorded on 1 July at 495 m depth off the north coast of Anticosti Island. 1 eel was recorded on 3 July at 265 m depth off the SW tip of Newfoundland.	Dutil et al. 2006, 2009b; Bourdages et al. 2008
Gulf of St. Lawrence south of the Laurentian Channel	Bottom otter trawl surveys, depths 13-386 m. 5,881 sets.	Series started in 1971. Most sets are conducted in September.	One 37 cm eel was recorded on 9 September at 94 m depth northeast of the Magdalen Islands. The timing and size are consistent with a migrating male silver eel, although male eels are rare in the St. Lawrence basin.	Hurlbut et al. 2008
Northumberland Strait	Bottom trawl surveys, depths 2-66 m. 2,575 sets.	Series started in 2001. Conducted in July-August in daytime only.	No eels were recorded	Comeau et al. 2008; Hanson 2009; Mark Hanson, DFO, pers. comm.
Labrador Sea, waters off the east and south coast of Newfoundland	Bottom trawl surveys, depths 32-1,605 m. 42,419 sets.	Series started in 1971. Conducted at various times of the year	No eels were recorded	Healy 2009.
Scotian Shelf, Gulf of Maine	Bottom otter trawl surveys	Series started in 1978	1 eel was recorded in the Bay of Fundy and 1 eel was recorded off the SW coast of Nova Scotia. Both captures occured in October. The timing of capture is consistent with these eels being migrating silvers.	Clark et al. 2010
Atlantic Coast of Nova Scotia, to 22 km offshore	Beach seines, gillnets, lobster traps without escape vents.	July-November 2006	No eels were recorded	Bundy et al. 2007
Atlantic Coast of Nova Scotia	Unmodified commercial lobster traps, fished by commercial fishers	2005-2006	6 eels were caught, ranging in length from 48 to 58 cm	den Heyer 2007; A. Bundy, DFO, pers. comm.

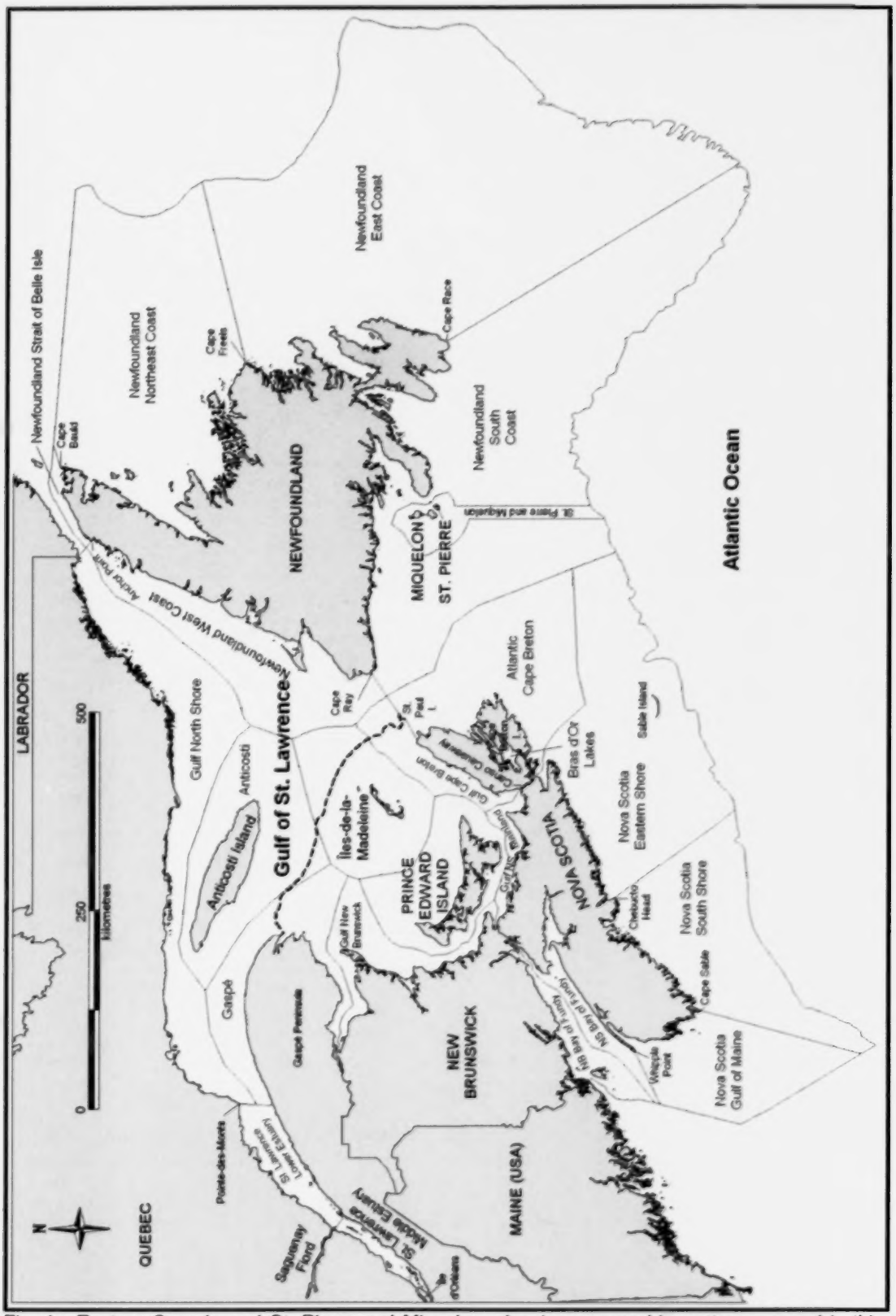


Fig. 1. Eastern Canada and St. Pierre and Miquelon, showing geographic sectors mapped in this atlas. The dashed line indicates the boundary between the northern and the southern Gulf of St. Lawrence.

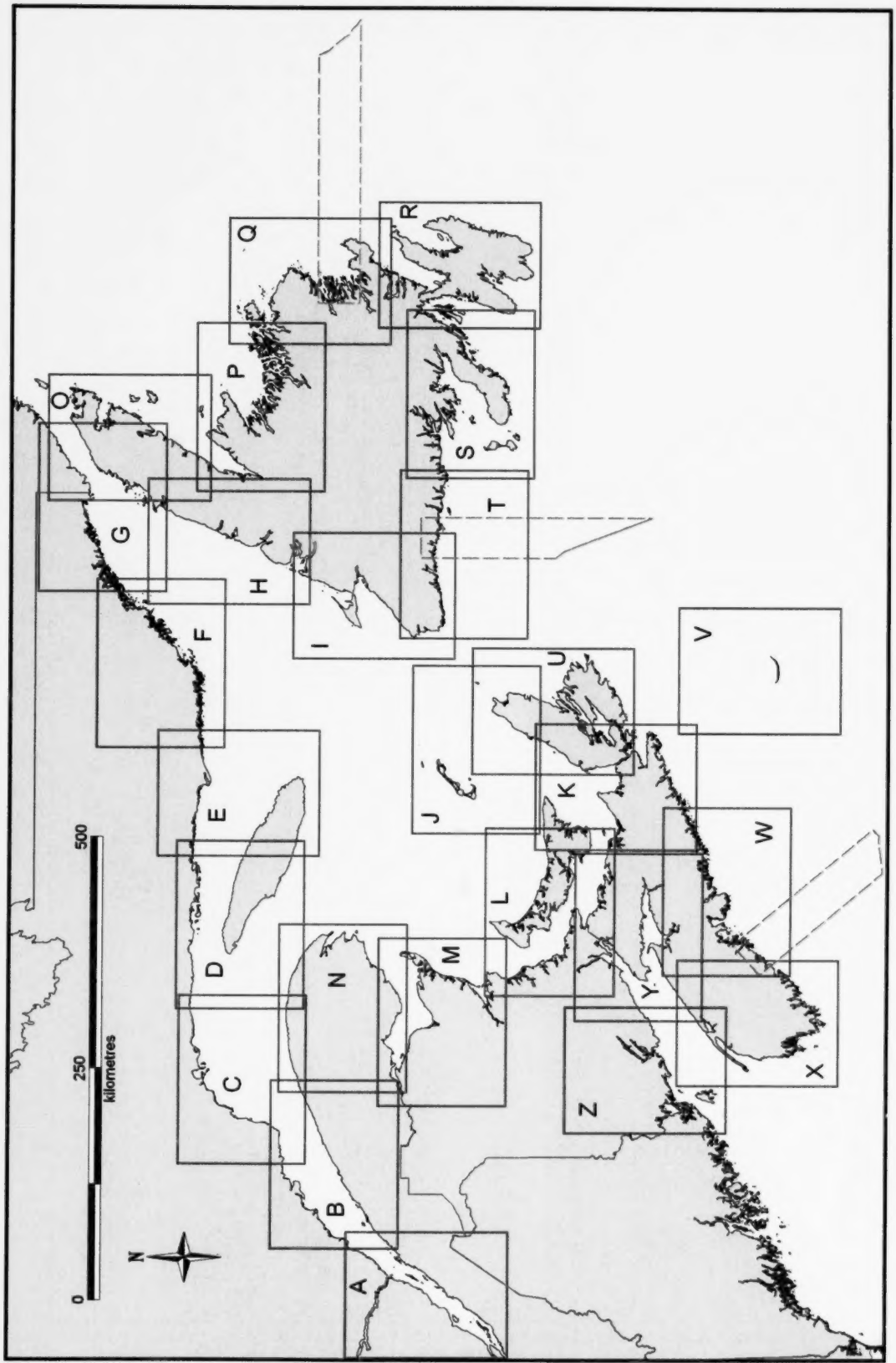
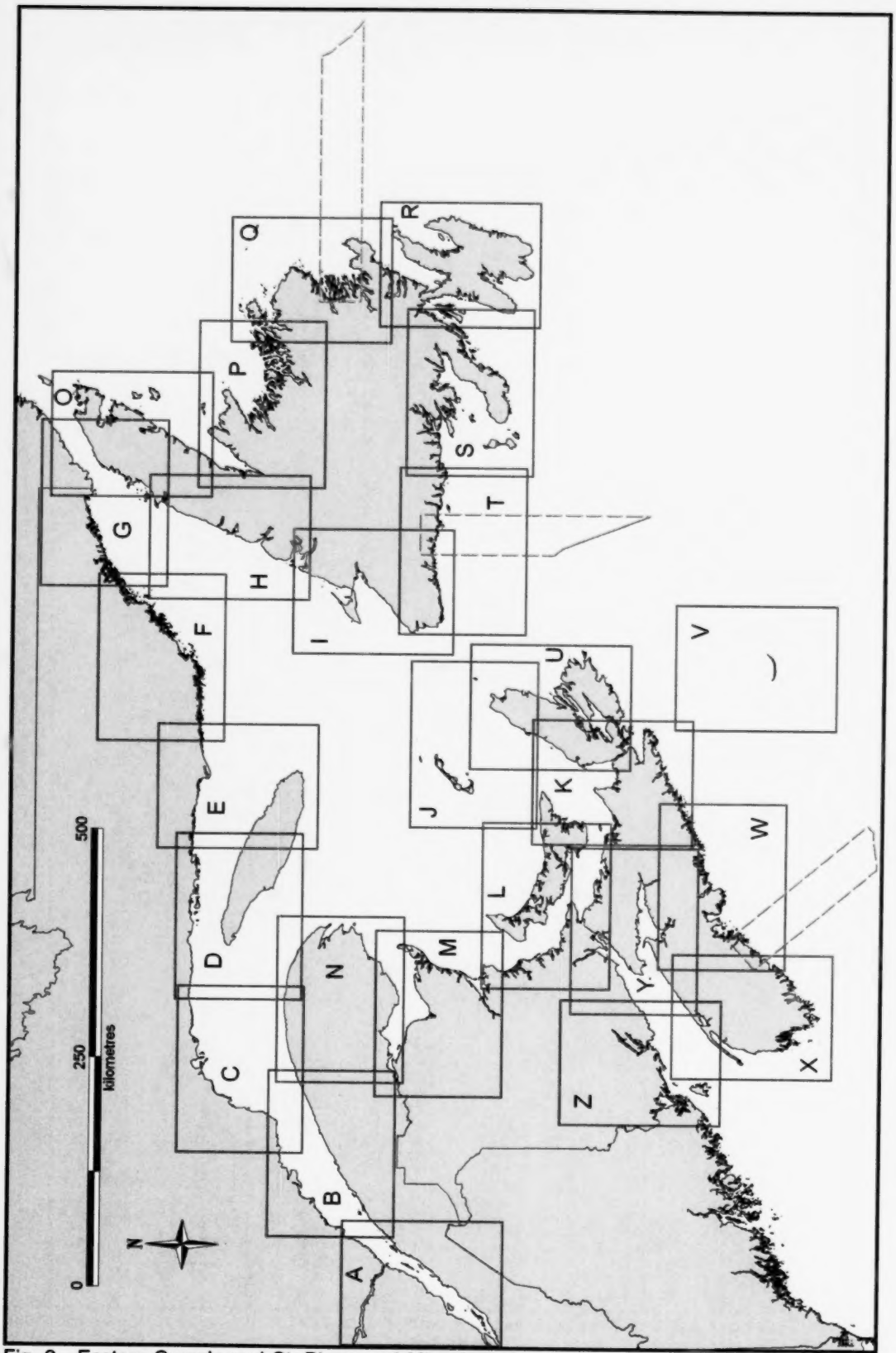


Fig. 2. Eastern Canada and St. Pierre and Miquelon, showing blocks mapped at larger scale in other figures. Locations of transects where depths are mapped are also shown.



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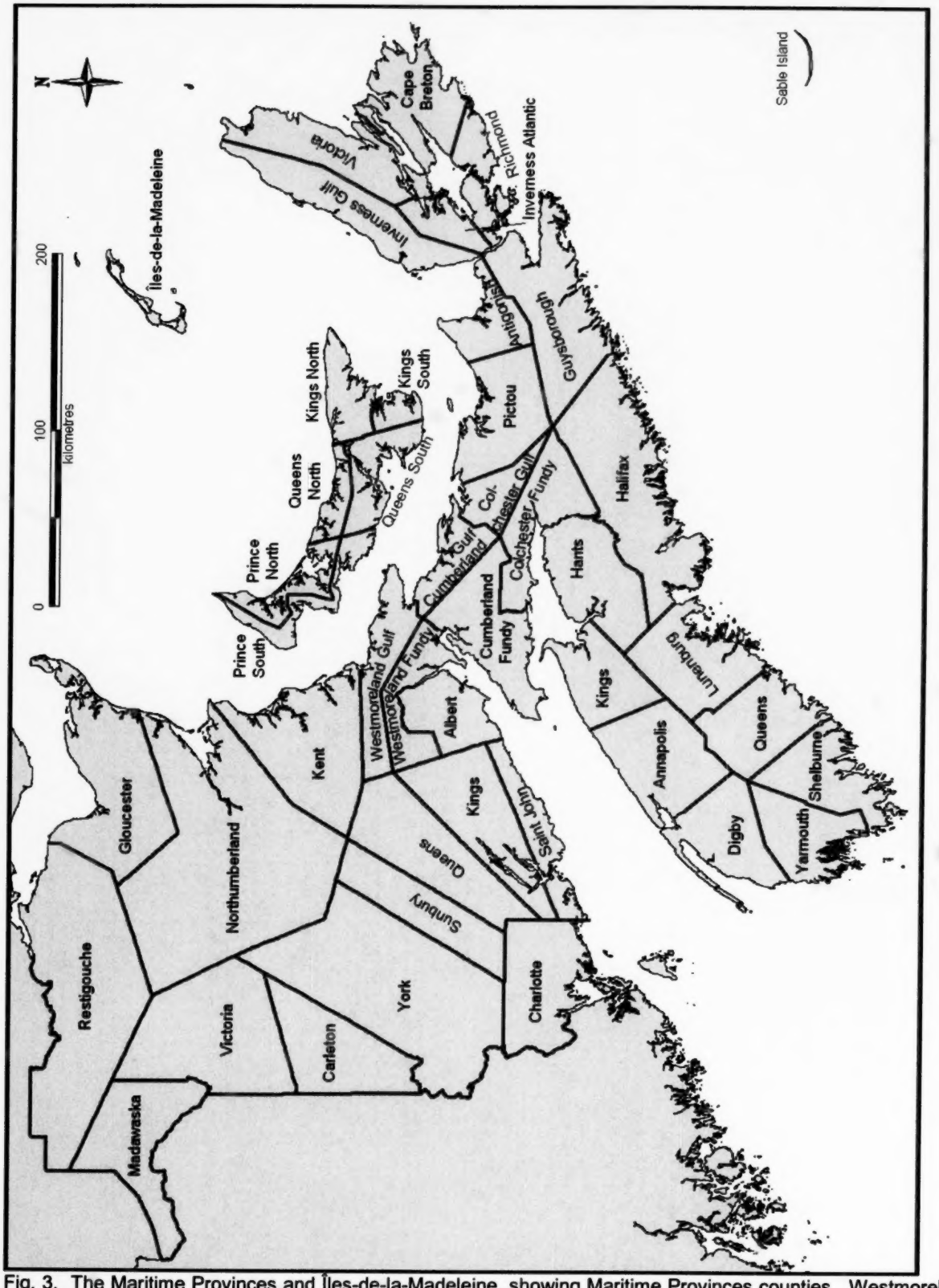
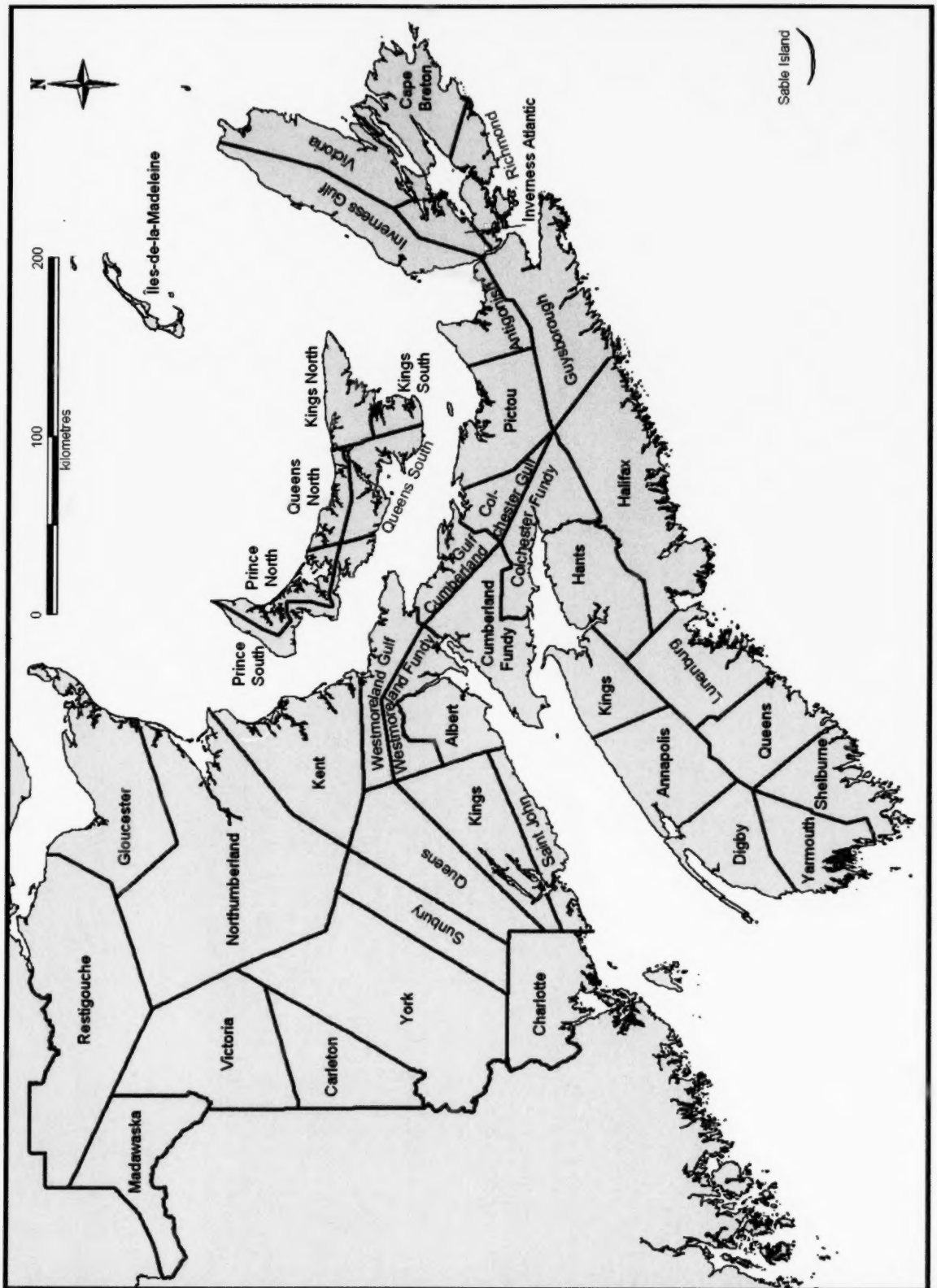


Fig. 3. The Maritime Provinces and Îles-de-la-Madeleine, showing Maritime Provinces counties. Westmoreland, Cumberland, and Colchester Counties are divided into Gulf of St. Lawrence and Bay of Fundy sections. Prince Edward Island counties are divided into north and south sections.



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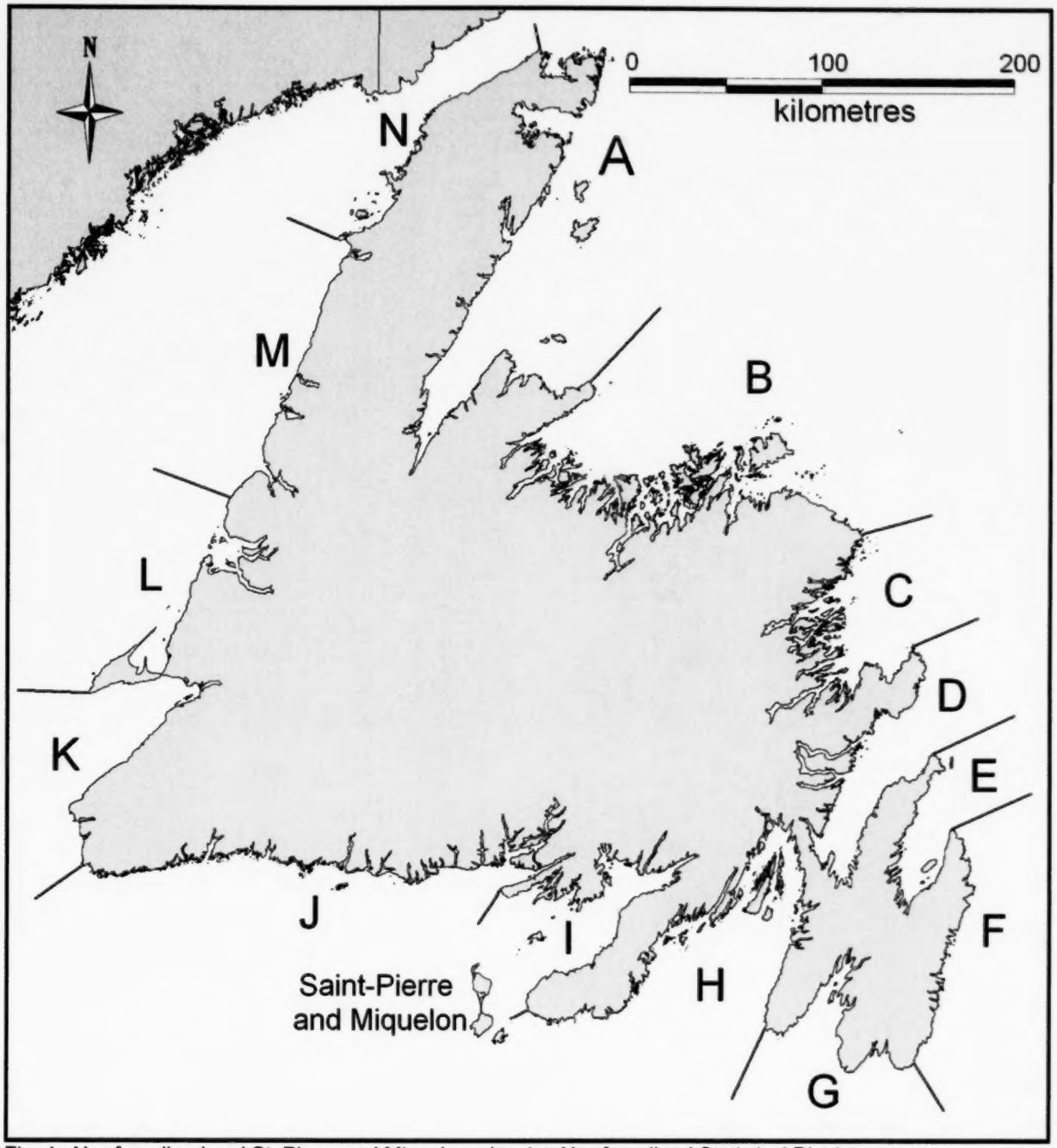

Fig. 4. Newfoundland and St. Pierre and Miquelon, showing Newfoundland Statistical Districts.

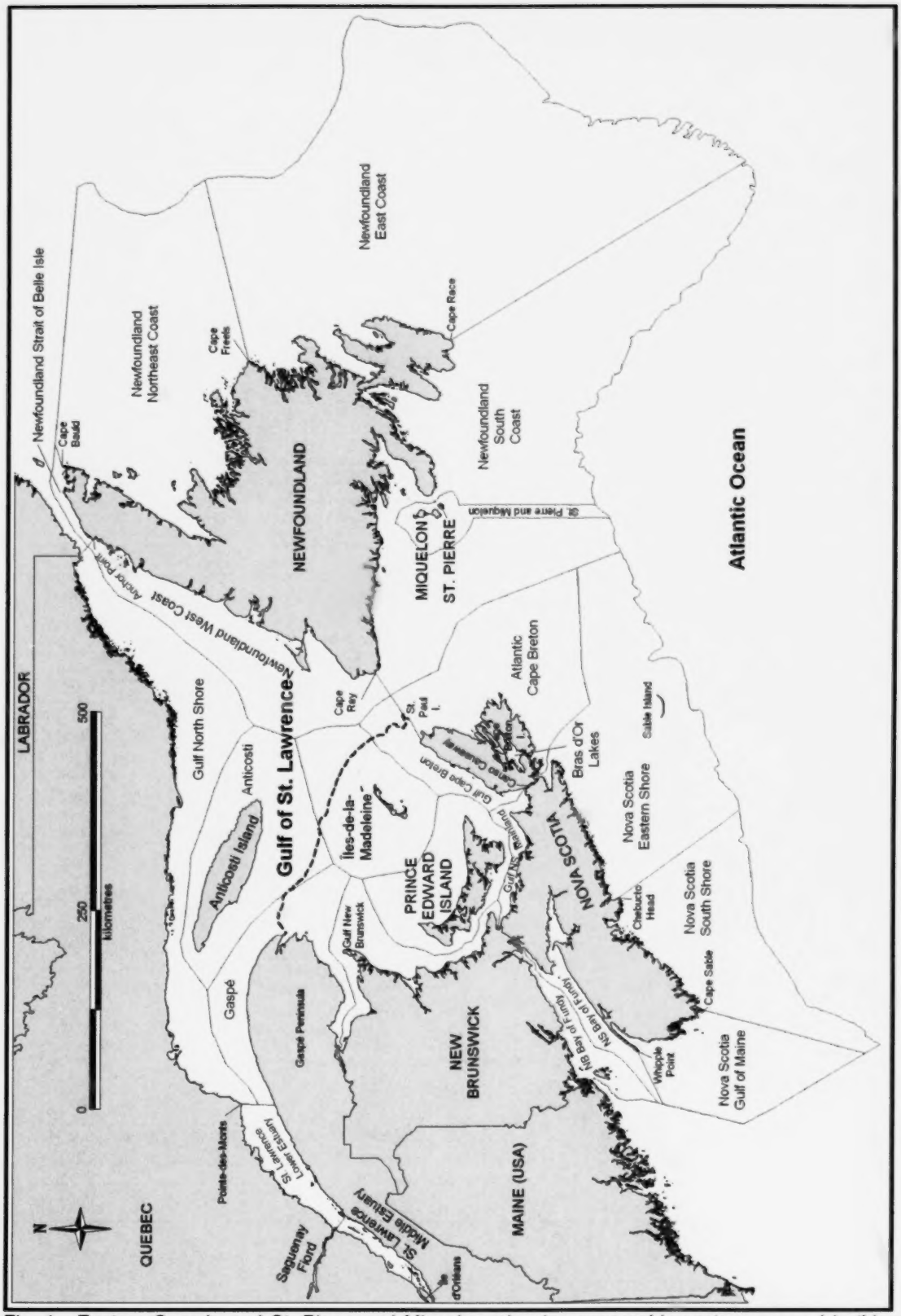

Fig. 1. Eastern Canada and St. Pierre and Miquelon, showing geographic sectors mapped in this atlas. The dashed line indicates the boundary between the northern and the southern Gulf of St. Lawrence.

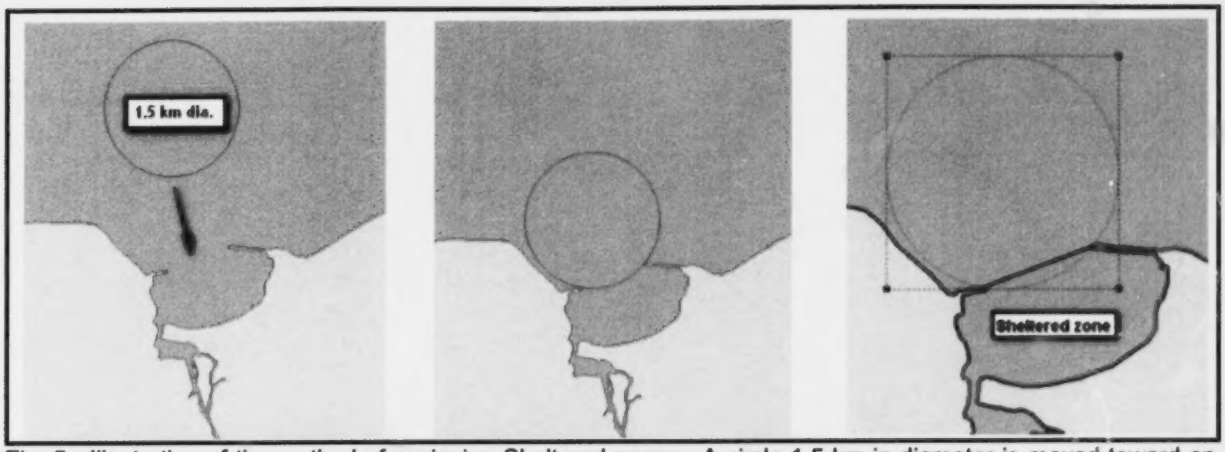

Fig. 5. Illustration of the method of assigning Sheltered zones. A circle 1.5 km in diameter is moved toward an inlet, until the circle touches the coastline at two points. A line is then drawn between these points. Waters inland of this line are considered Sheltered.

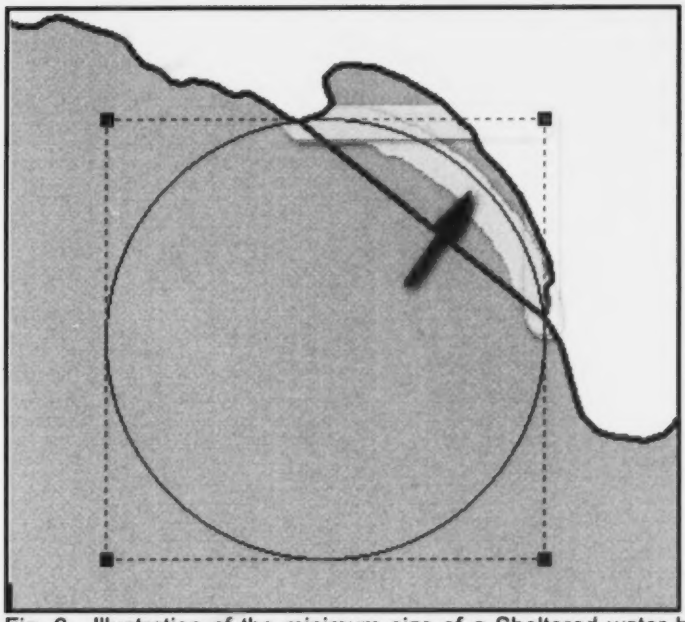

Fig. 6. Illustration of the minimum size of a Sheltered water body. To be considered Sheltered, a water body must be equal to or larger than 0.12071 km^2. This value is the area between a circle 1.5 km in diameter and the corner of a square 1.5 km x 1.5 km, as bounded by the yellow highlight.

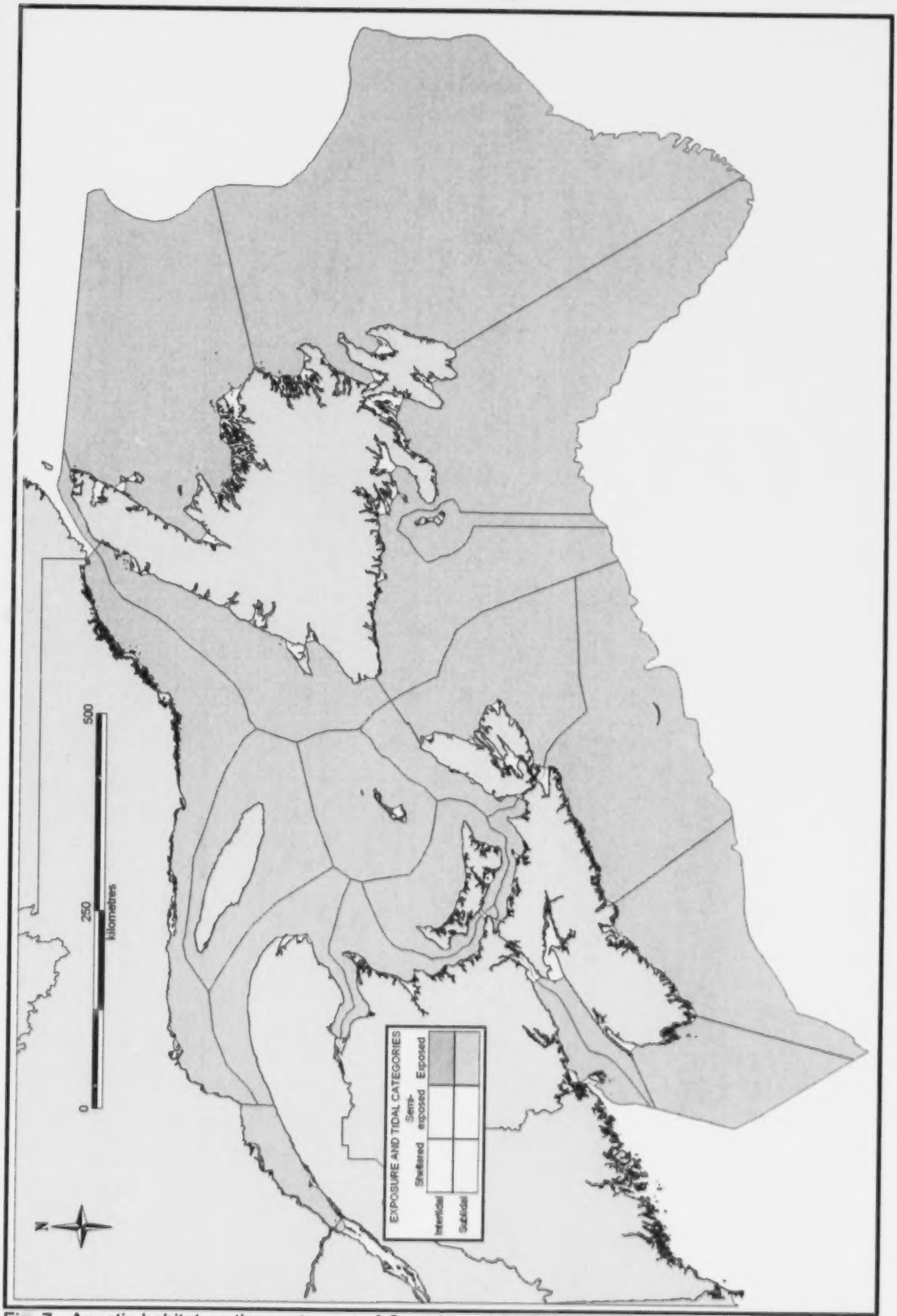

Fig. 7. Aquatic habitat on the east coast of Canada and St. Pierre and Miquelon, by exposure category and tidal zone.

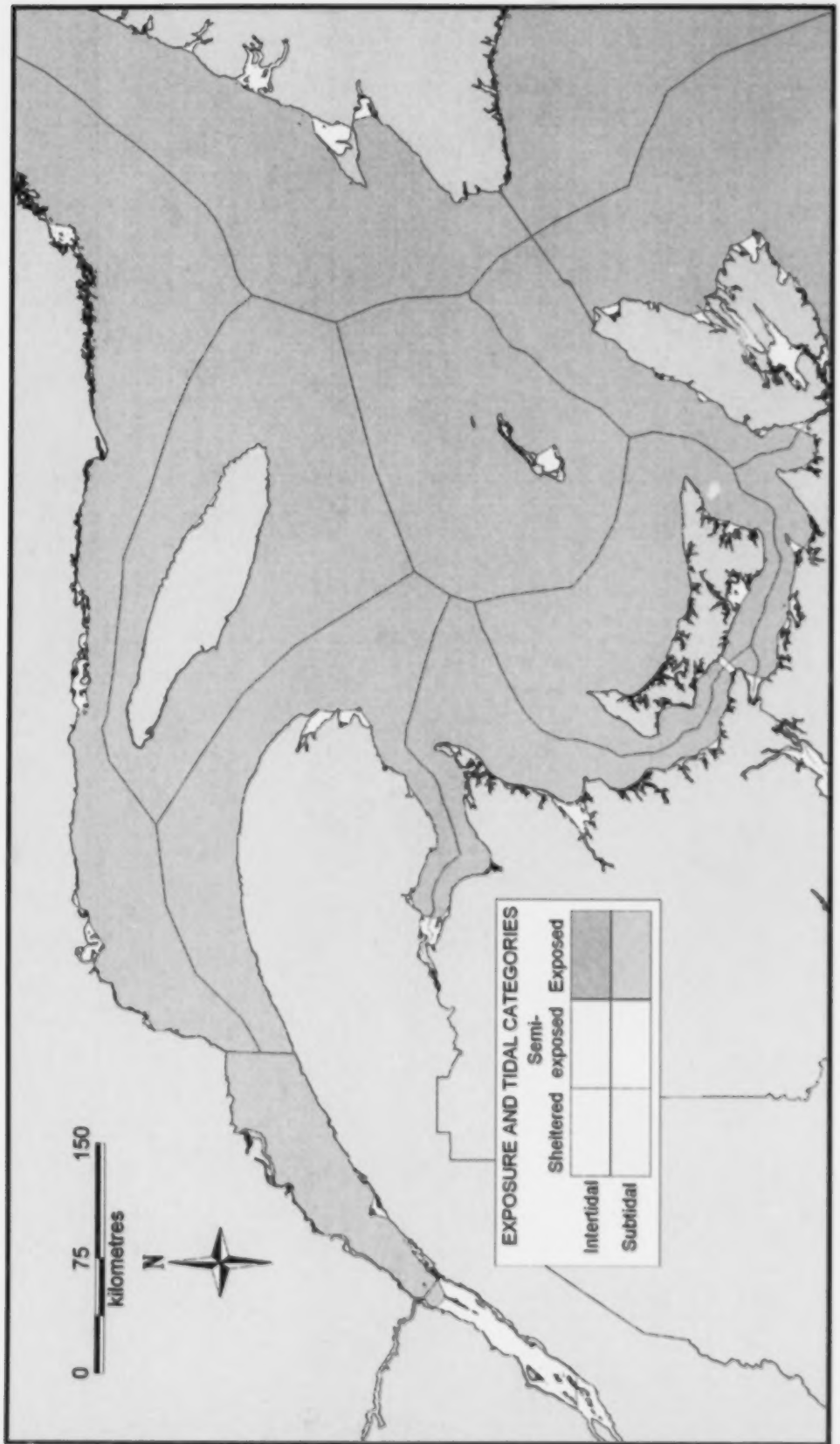

Fig. 8. Aquatic habitat in the St. Lawrence Estuary and Gulf, by exposure category and tidal zone.

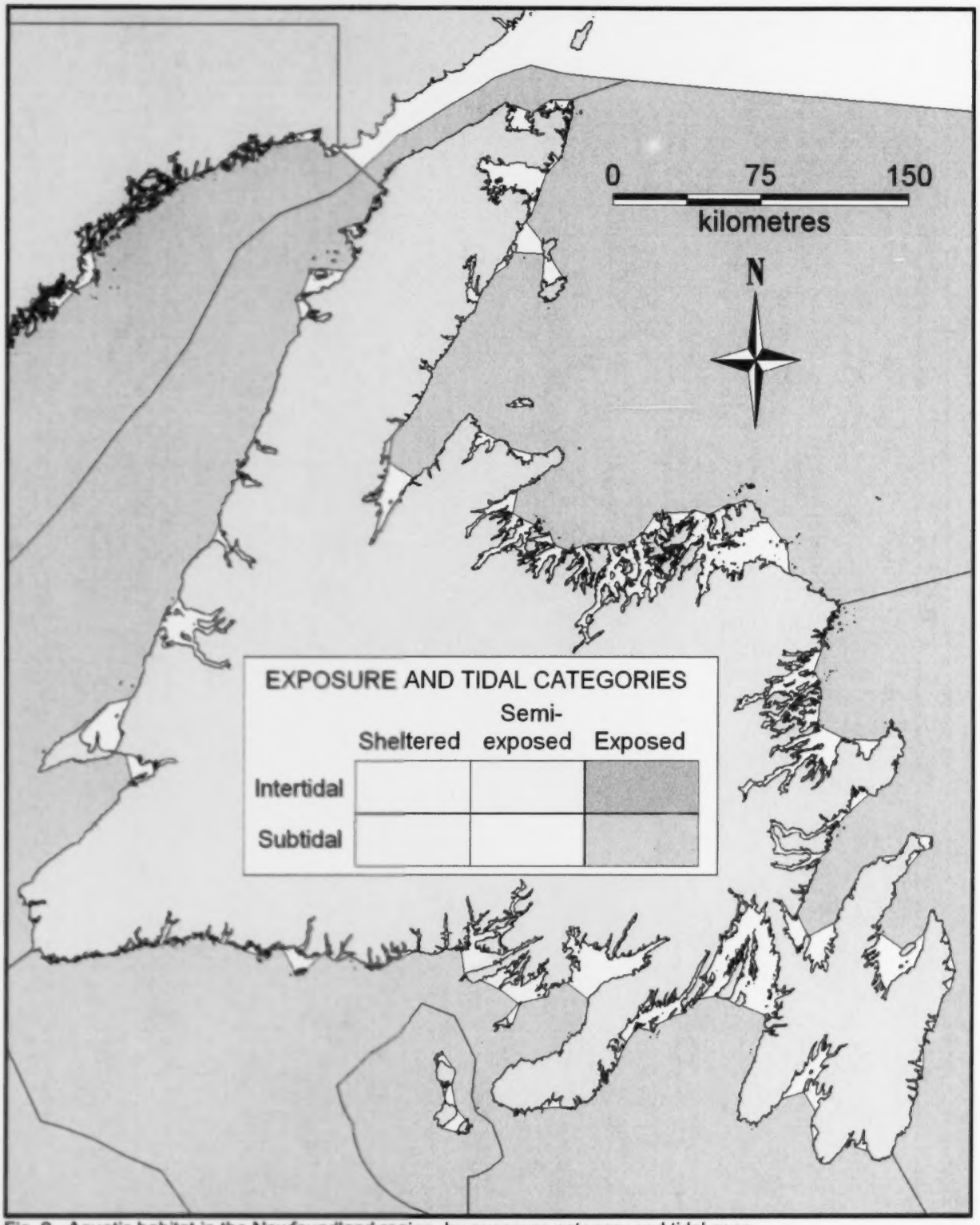

Fig. 9. Aquatic habitat in the Newfoundland region, by exposure category and tidal zone.

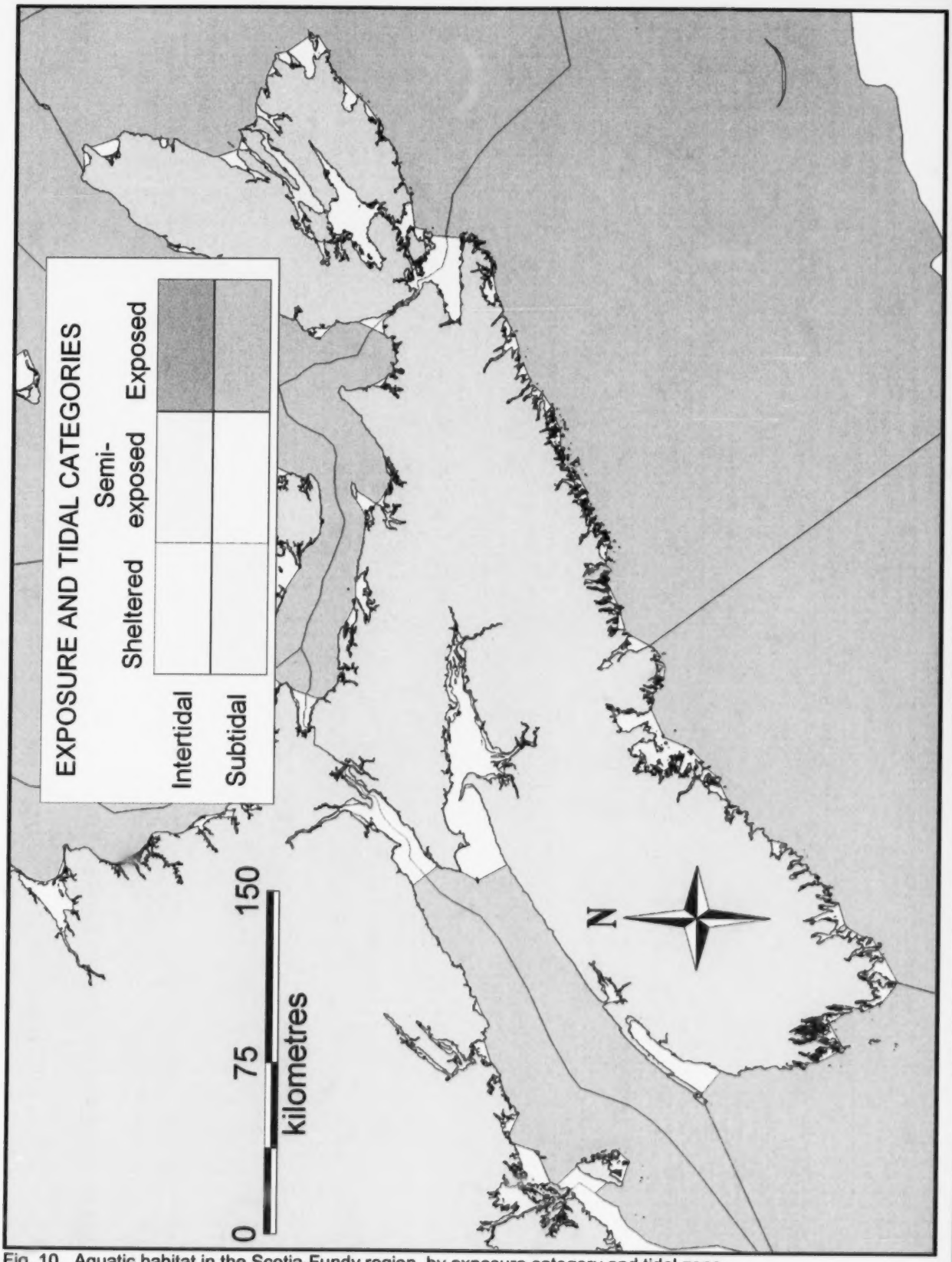

Fig. 10. Aquatic habitat in the Scotia-Fundy region, by exposure category and tidal zone.

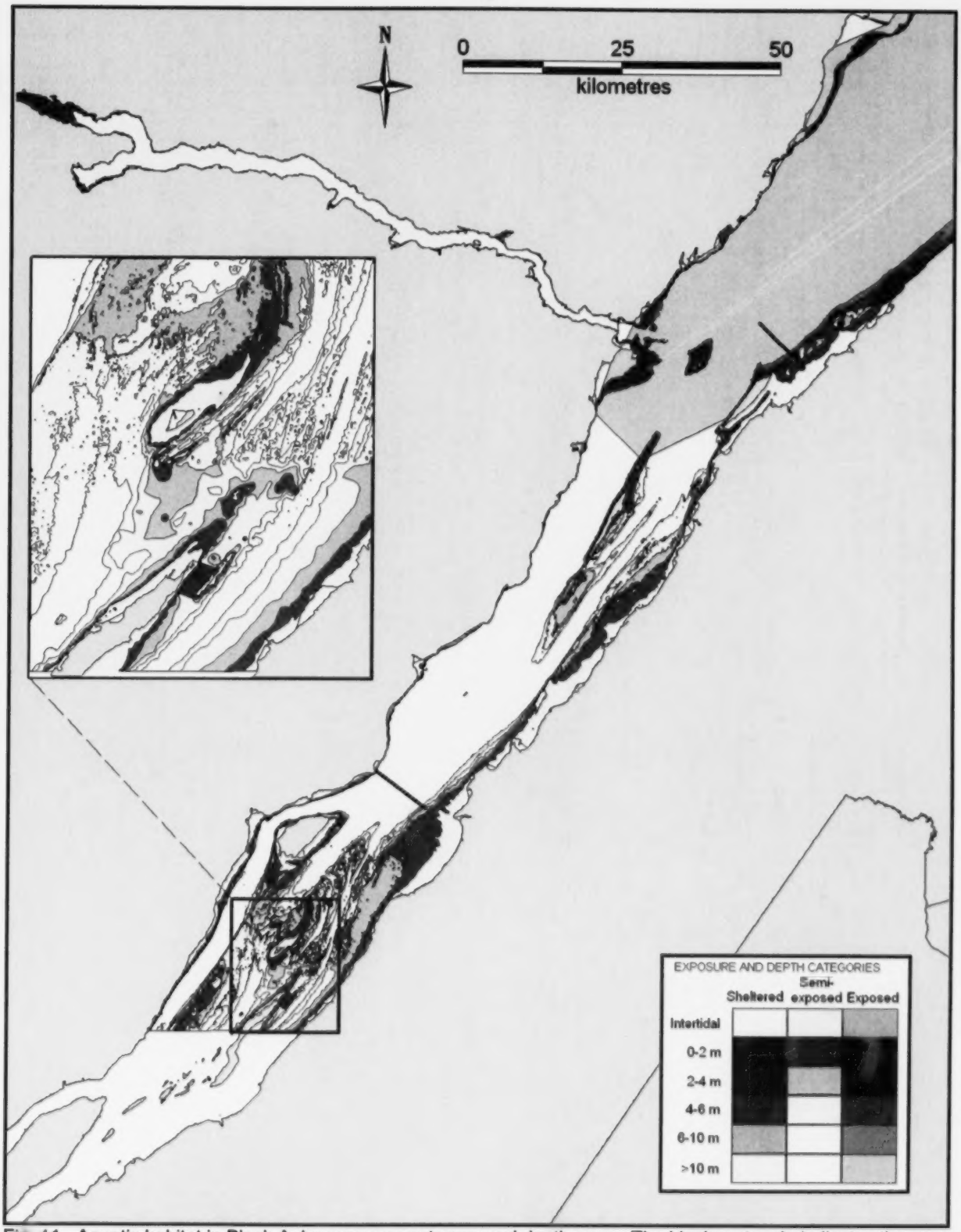

Fig. 11. Aquatic habitat in Block A, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

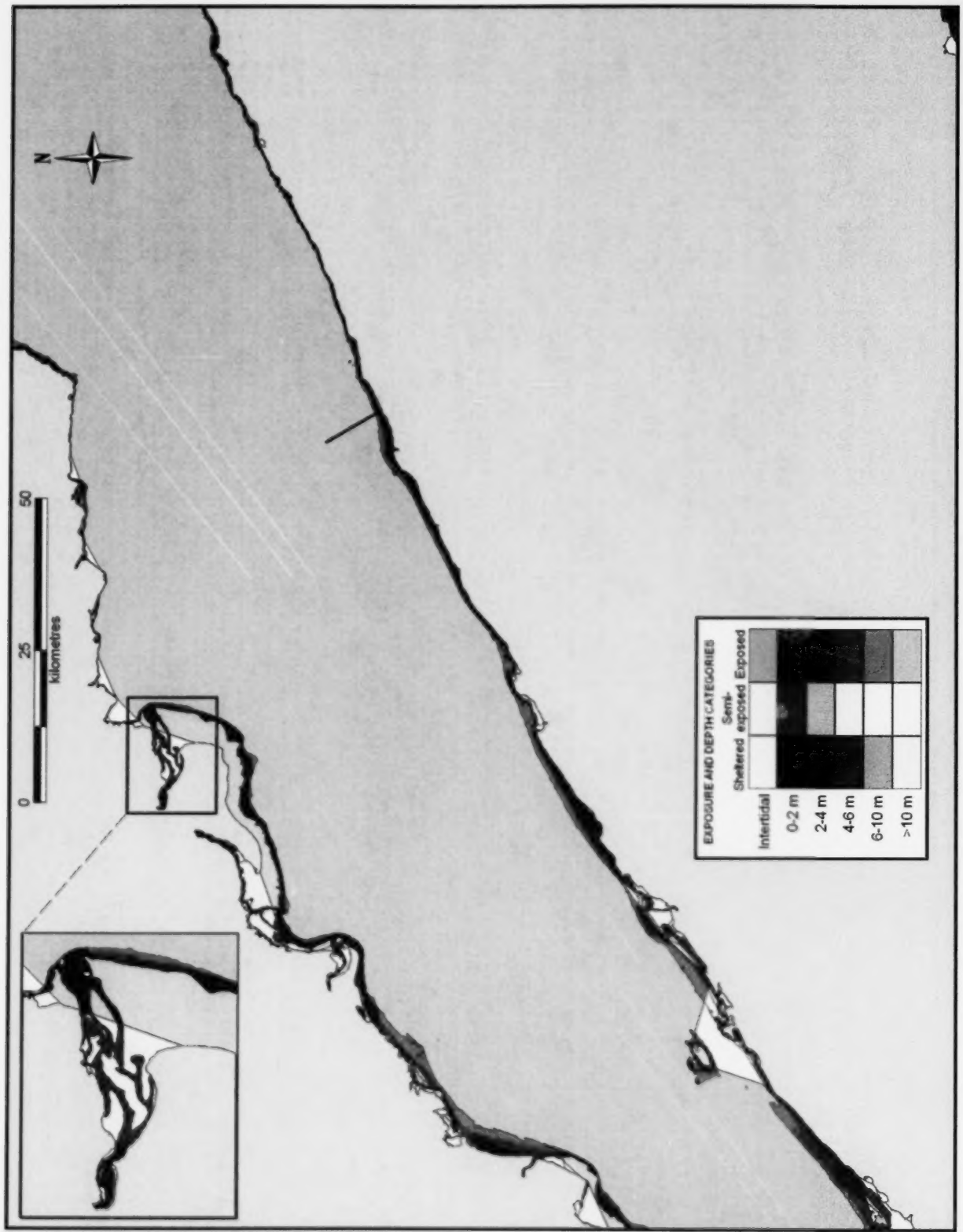

Fig. 12. Aquatic habitat in Block B, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

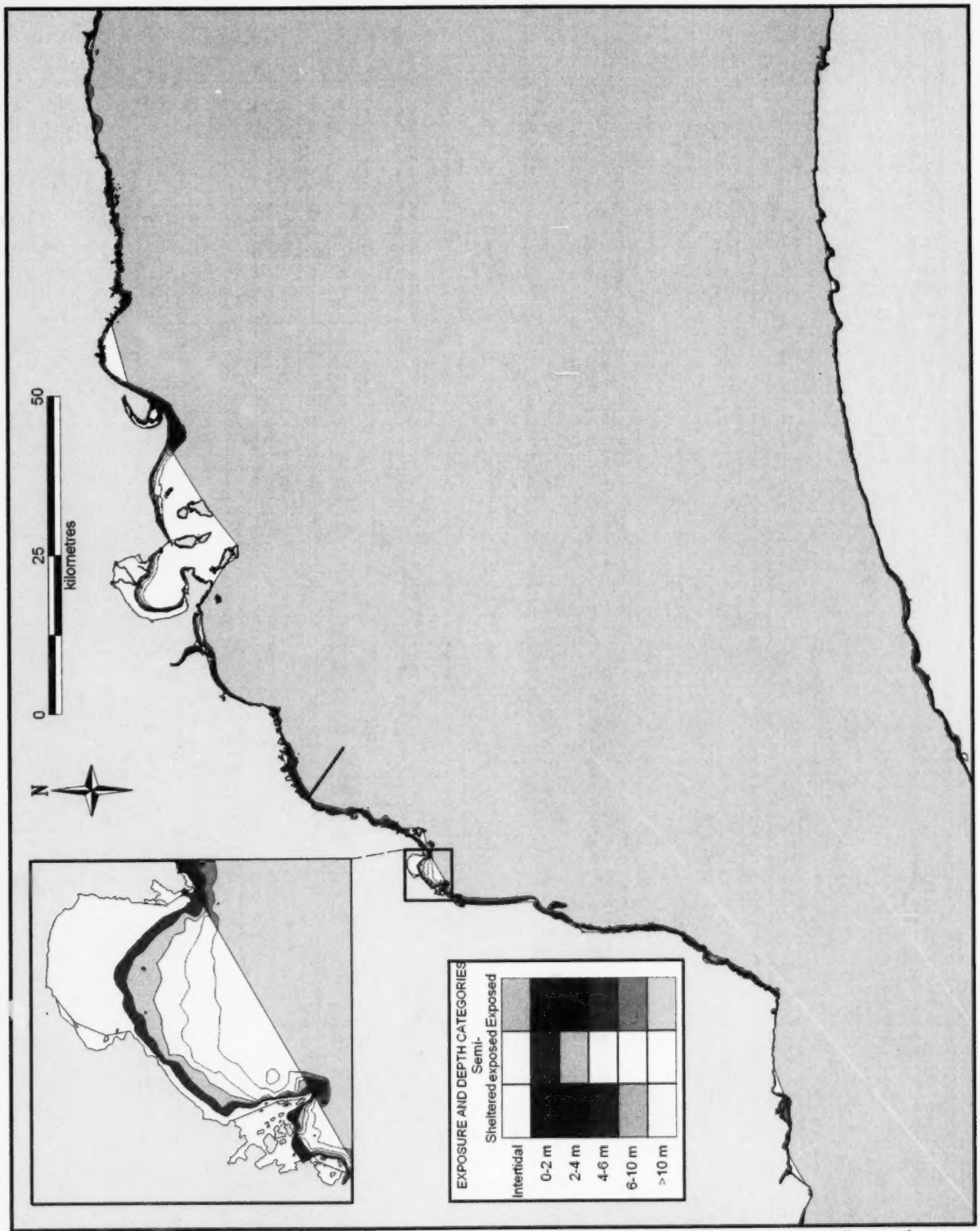

Fig. 13. Aquatic habitat in Block C, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

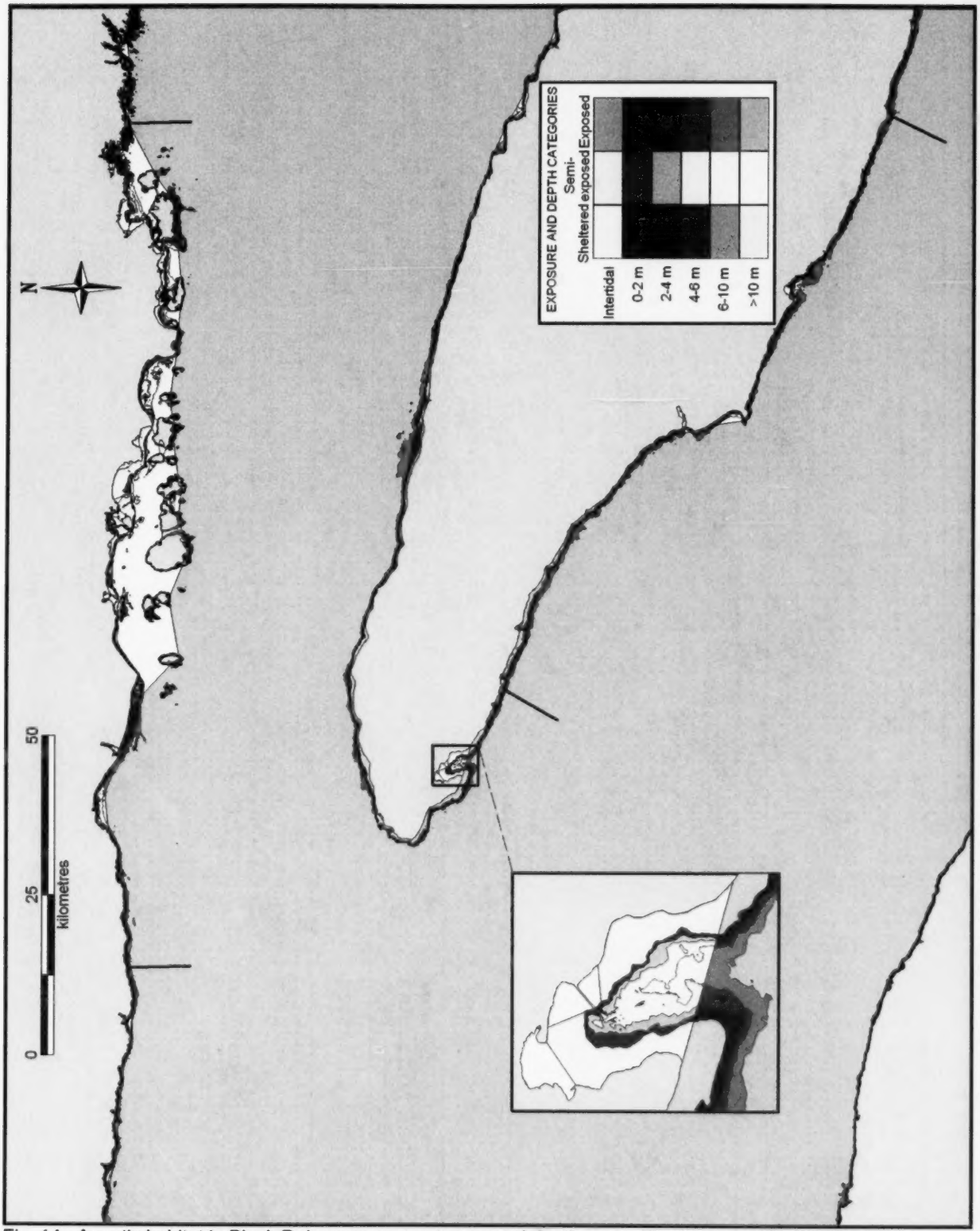

Fig. 14. Aquatic habitat in Block D, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

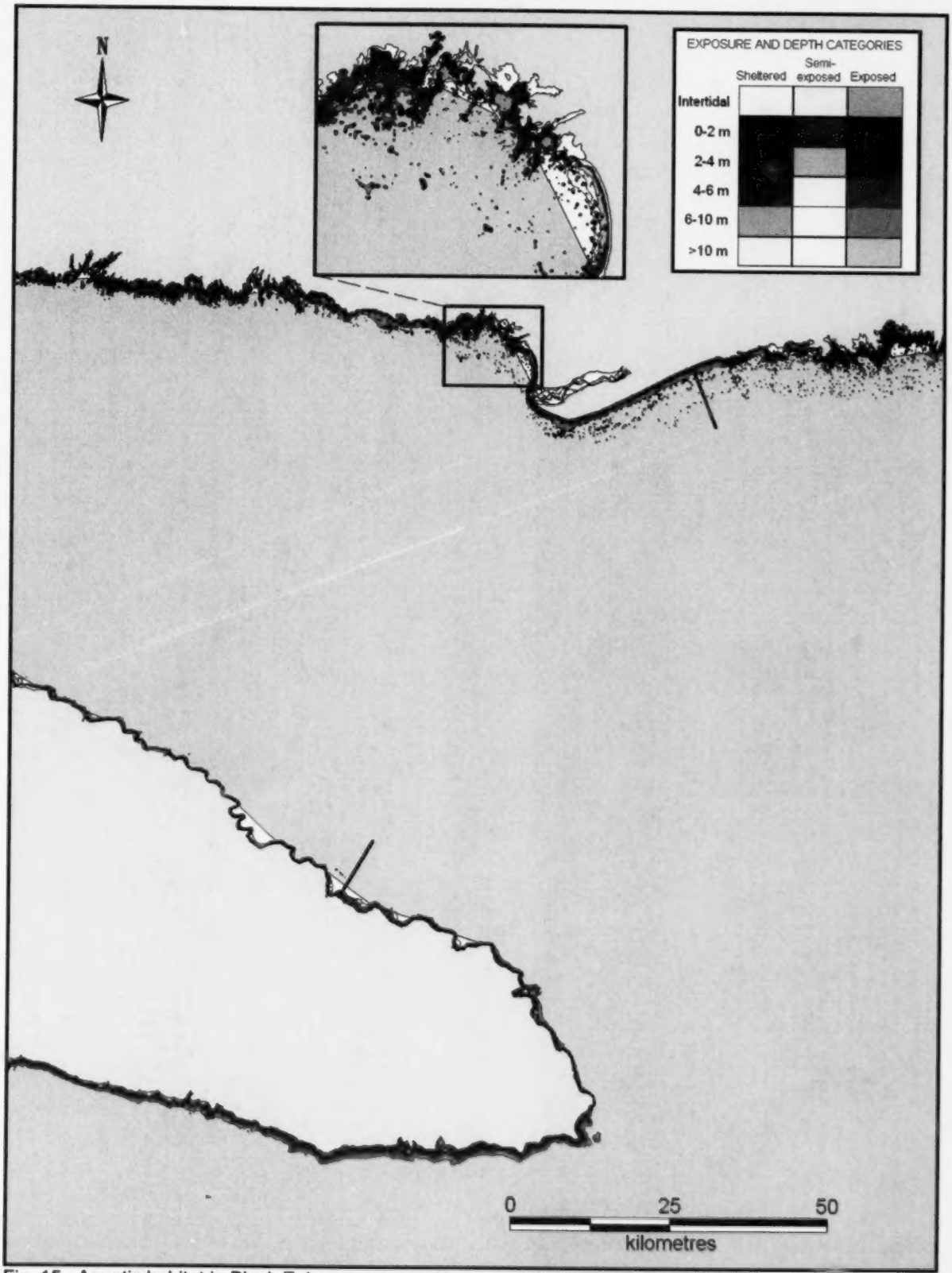

Fig. 15. Aquatic habitat in Block E, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

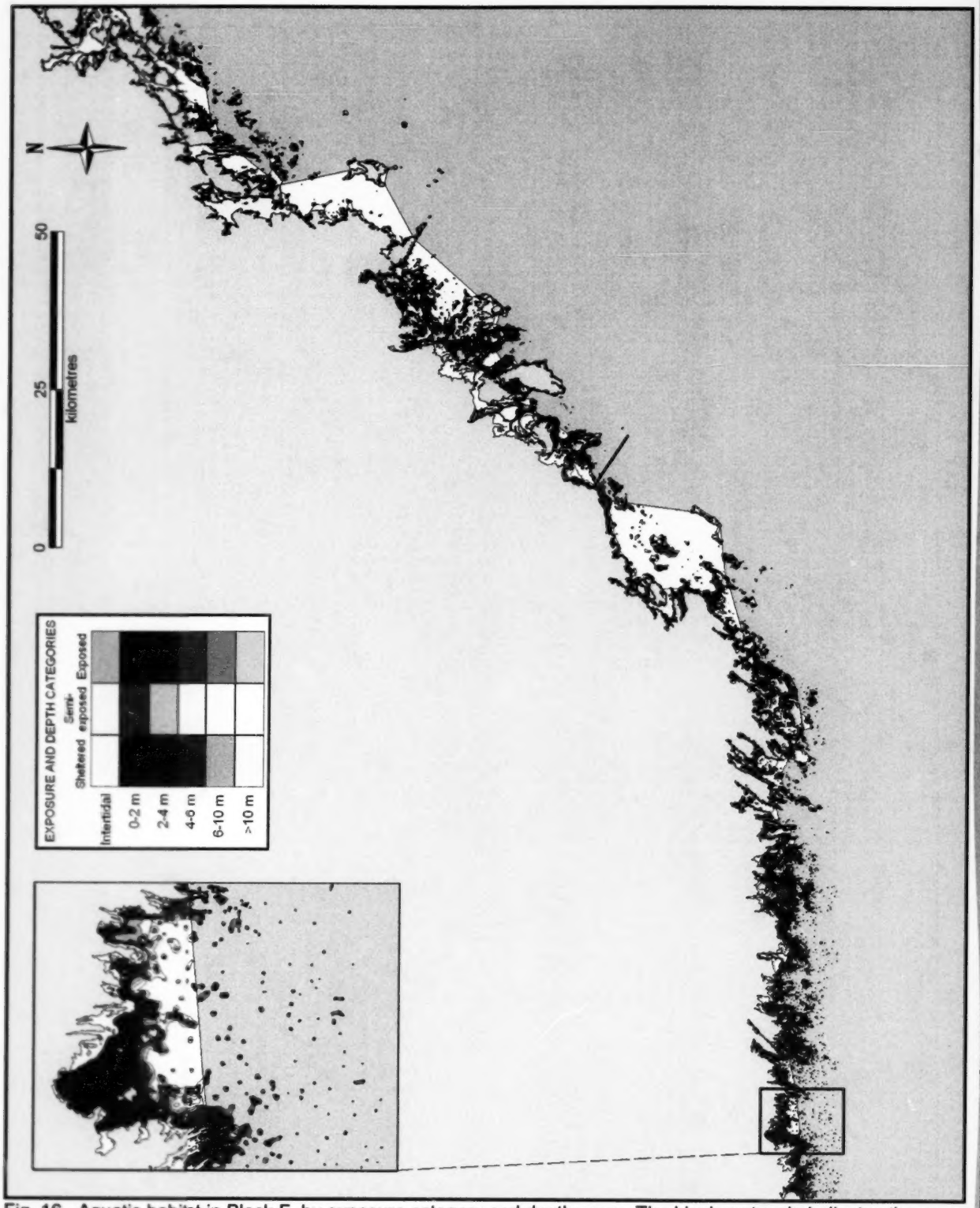

Fig. 16. Aquatic habitat in Block F, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

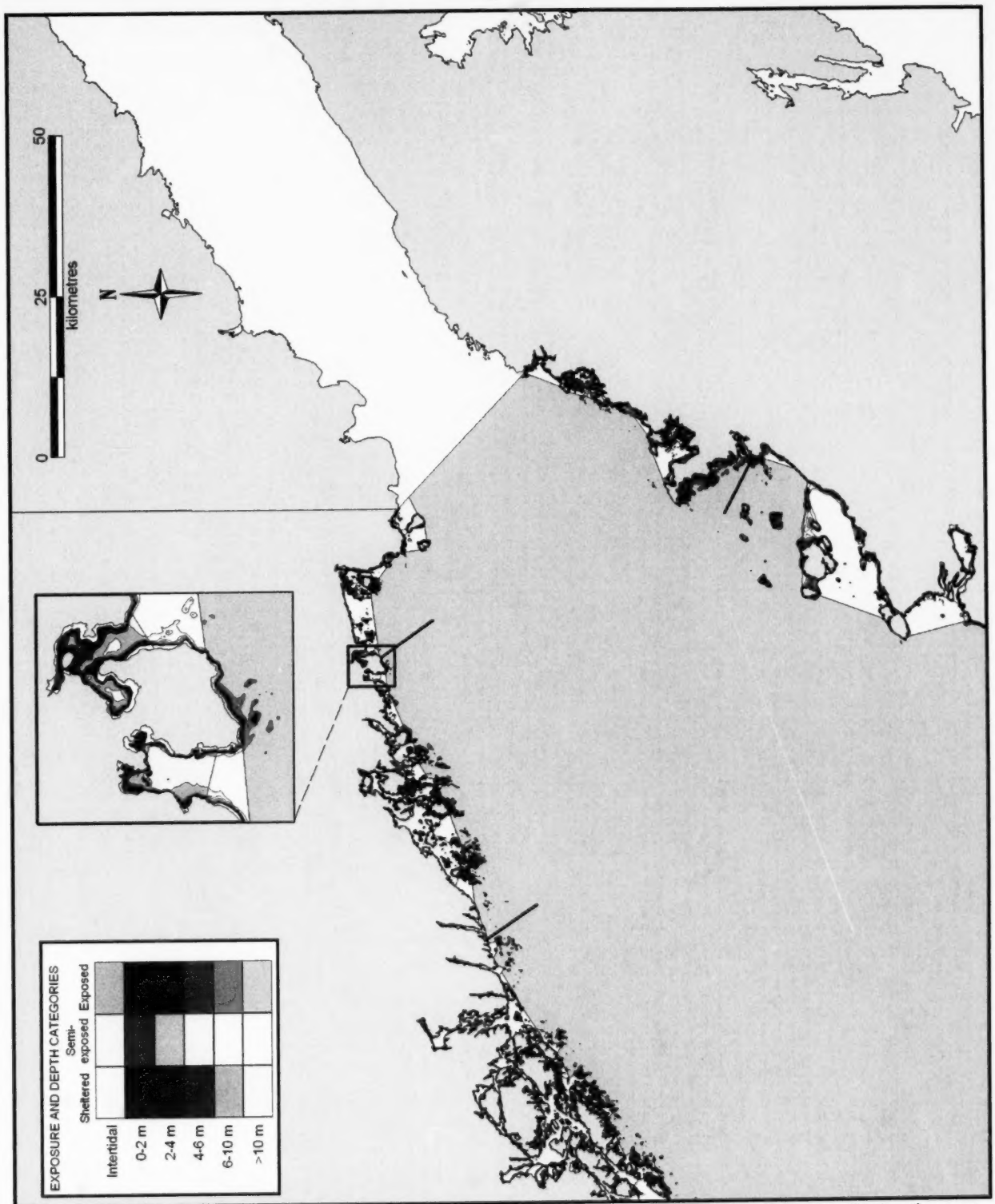

Fig. 17. Aquatic habitat in Block G, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

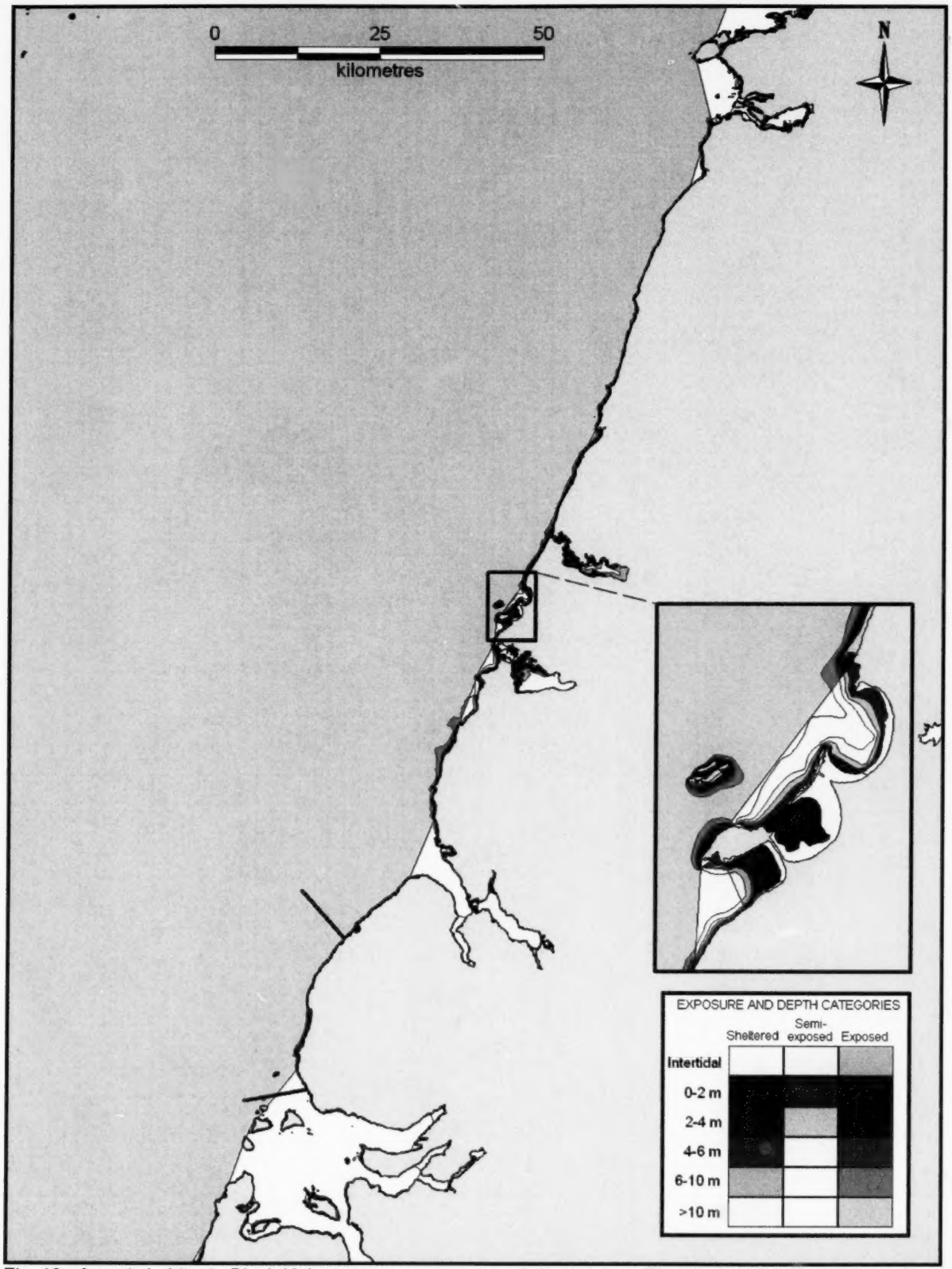

Fig. 18. Aquatic habitat in Block H, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

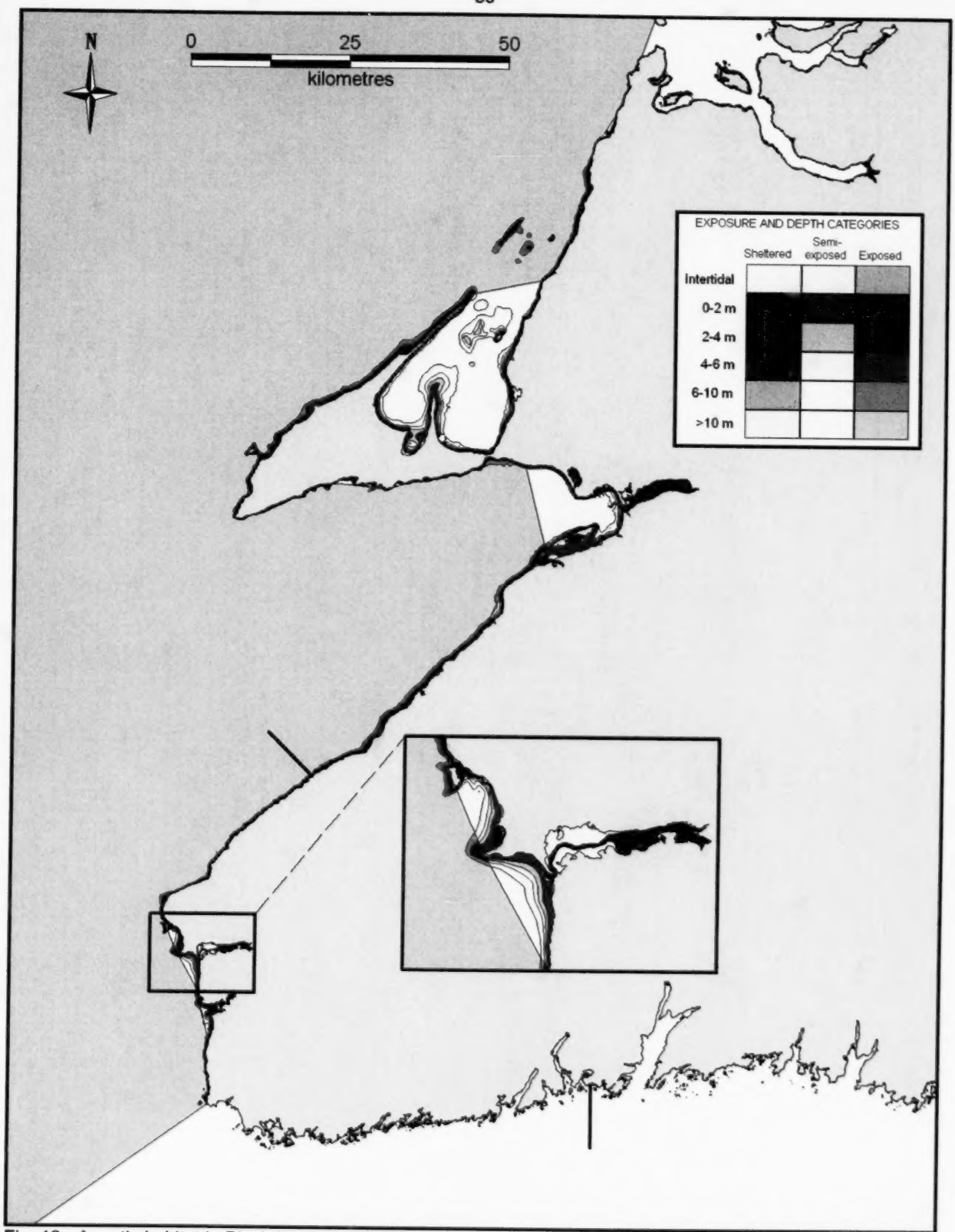

Fig. 19. Aquatic habitat in Block I, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

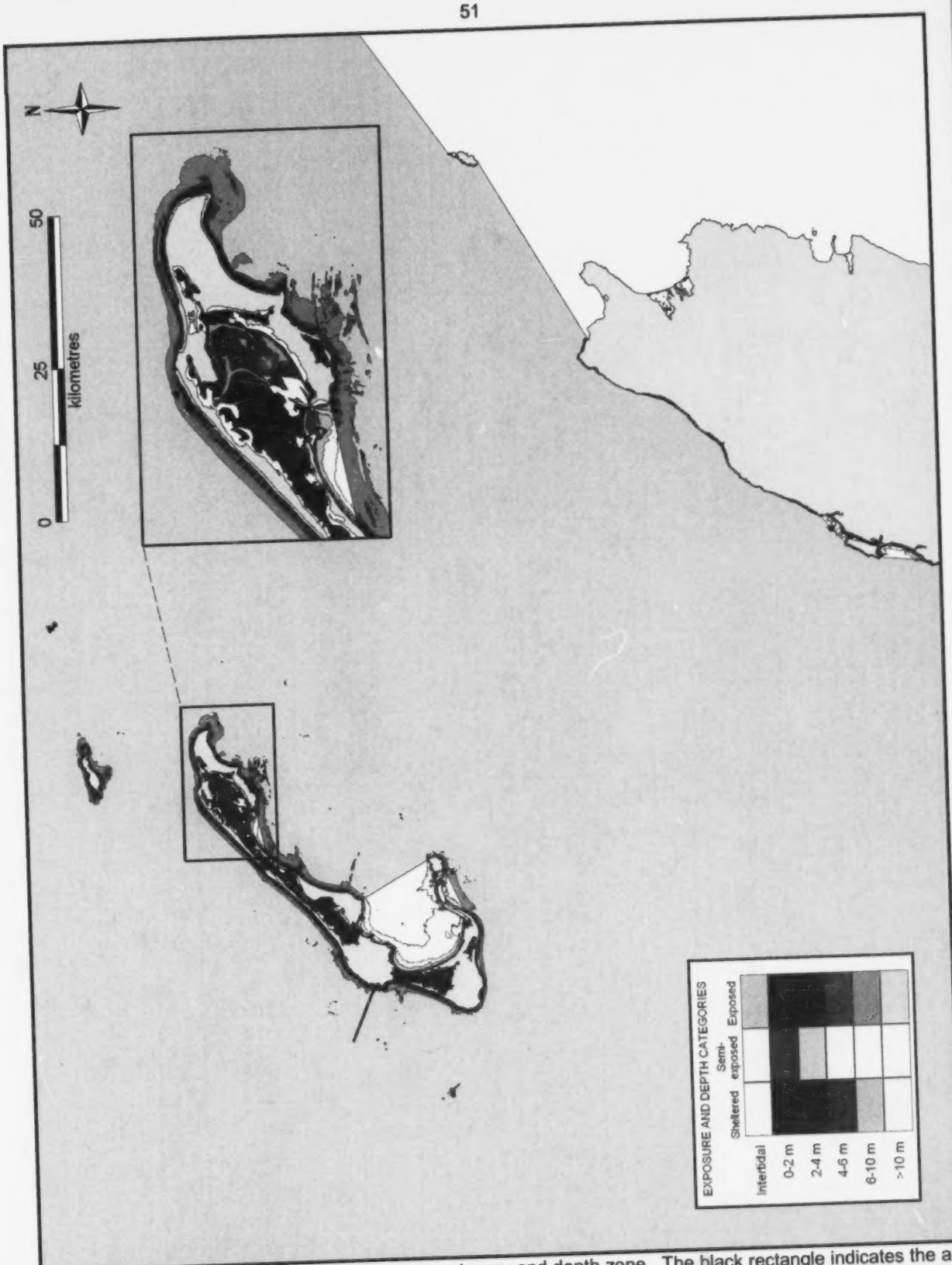

Fig. 20. Aquatic habitat in Block J, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

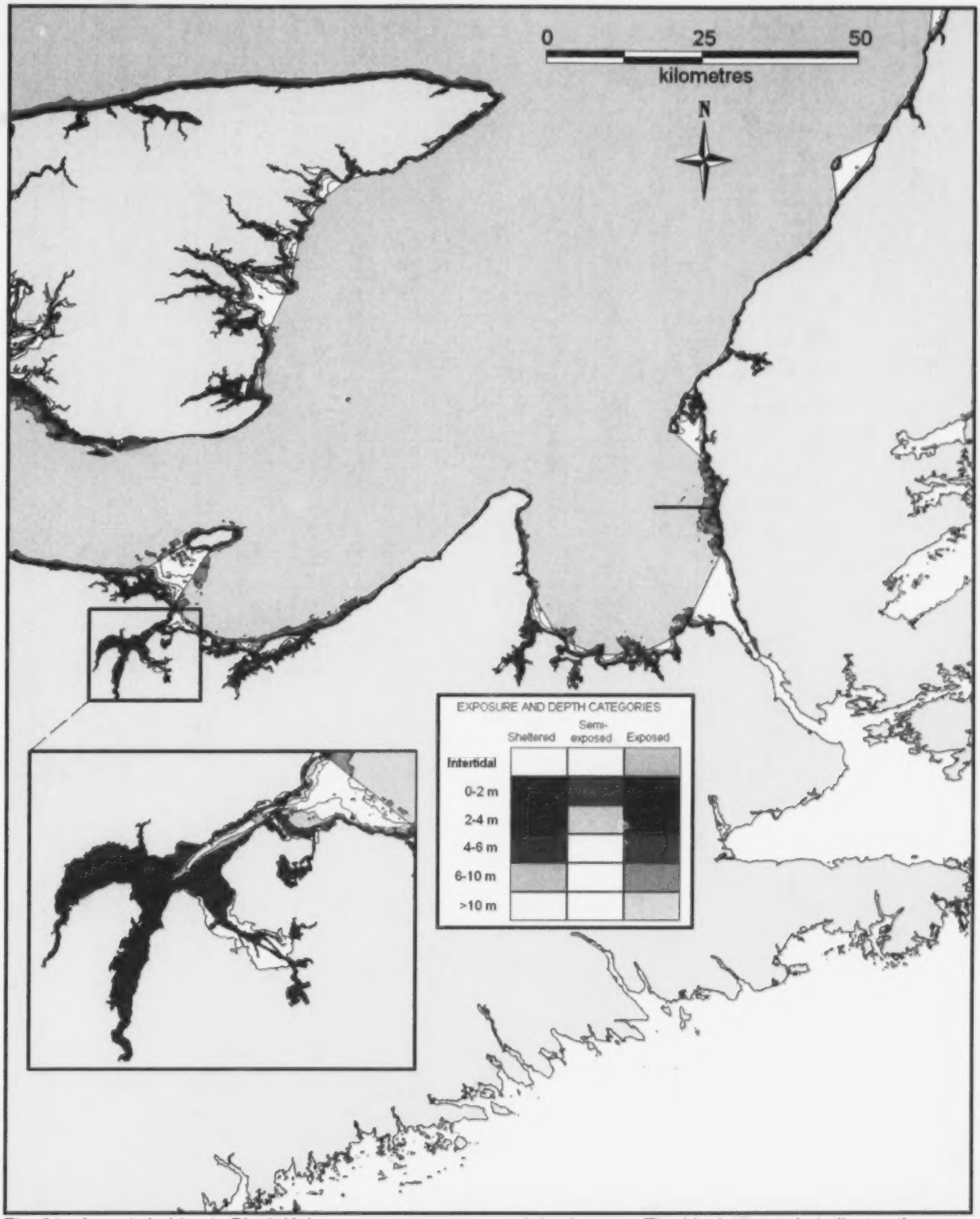

Fig. 21. Aquatic habitat in Block K, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

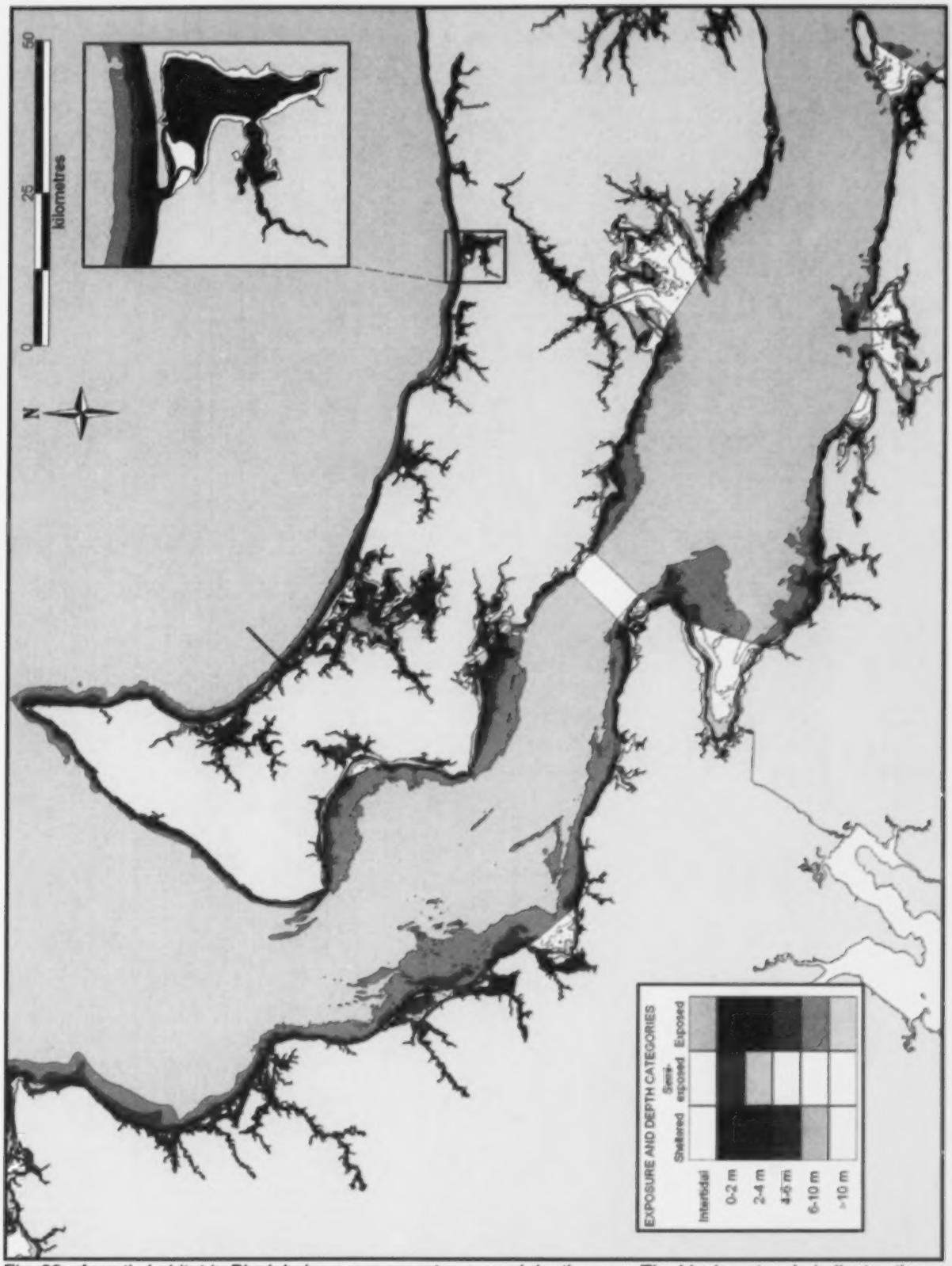

Fig. 22. Aquatic habitat in Block L, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

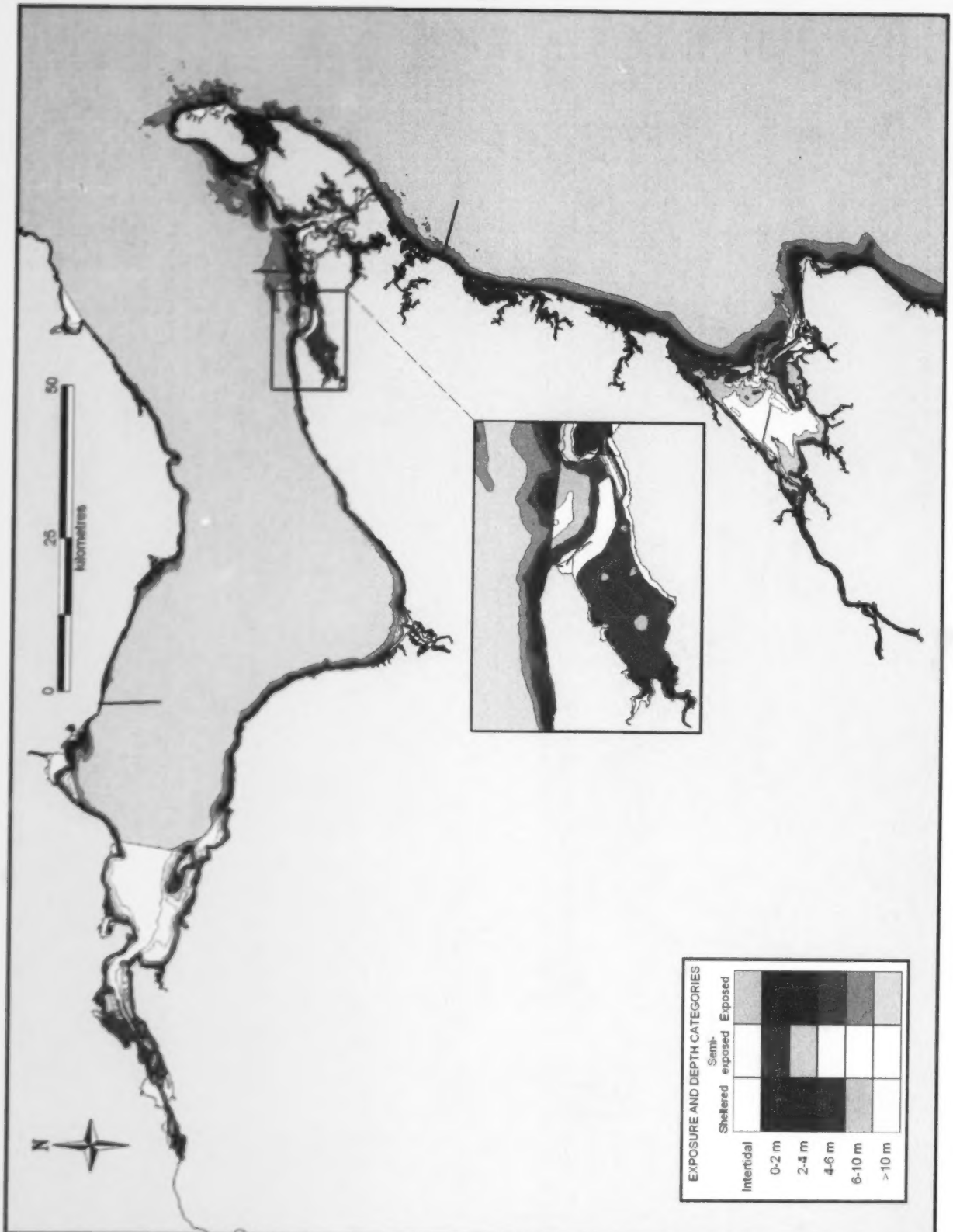

Fig. 23. Aquatic habitat in Block M, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

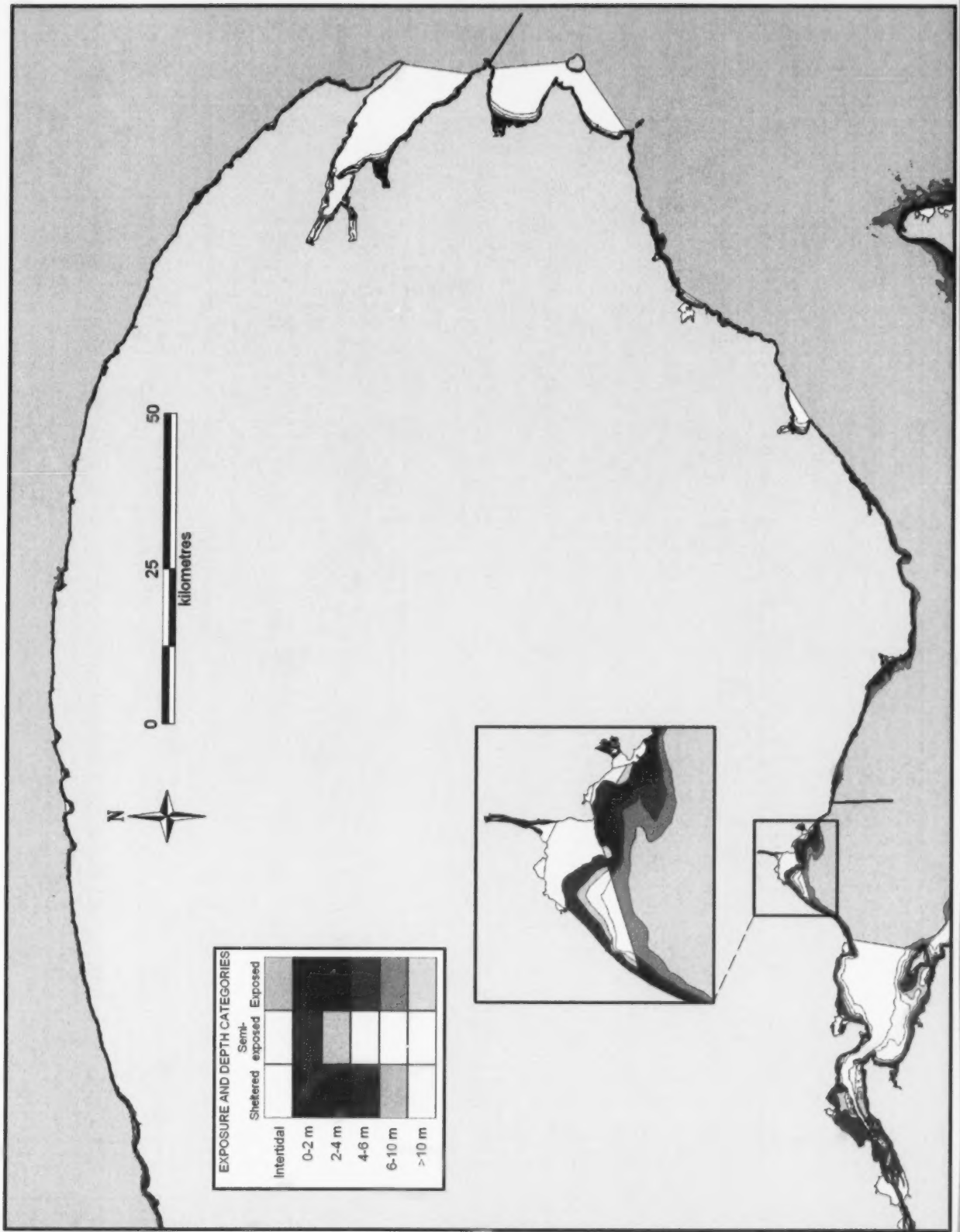

Fig. 24. Aquatic habitat in Block N, by exposure category and depth zone. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

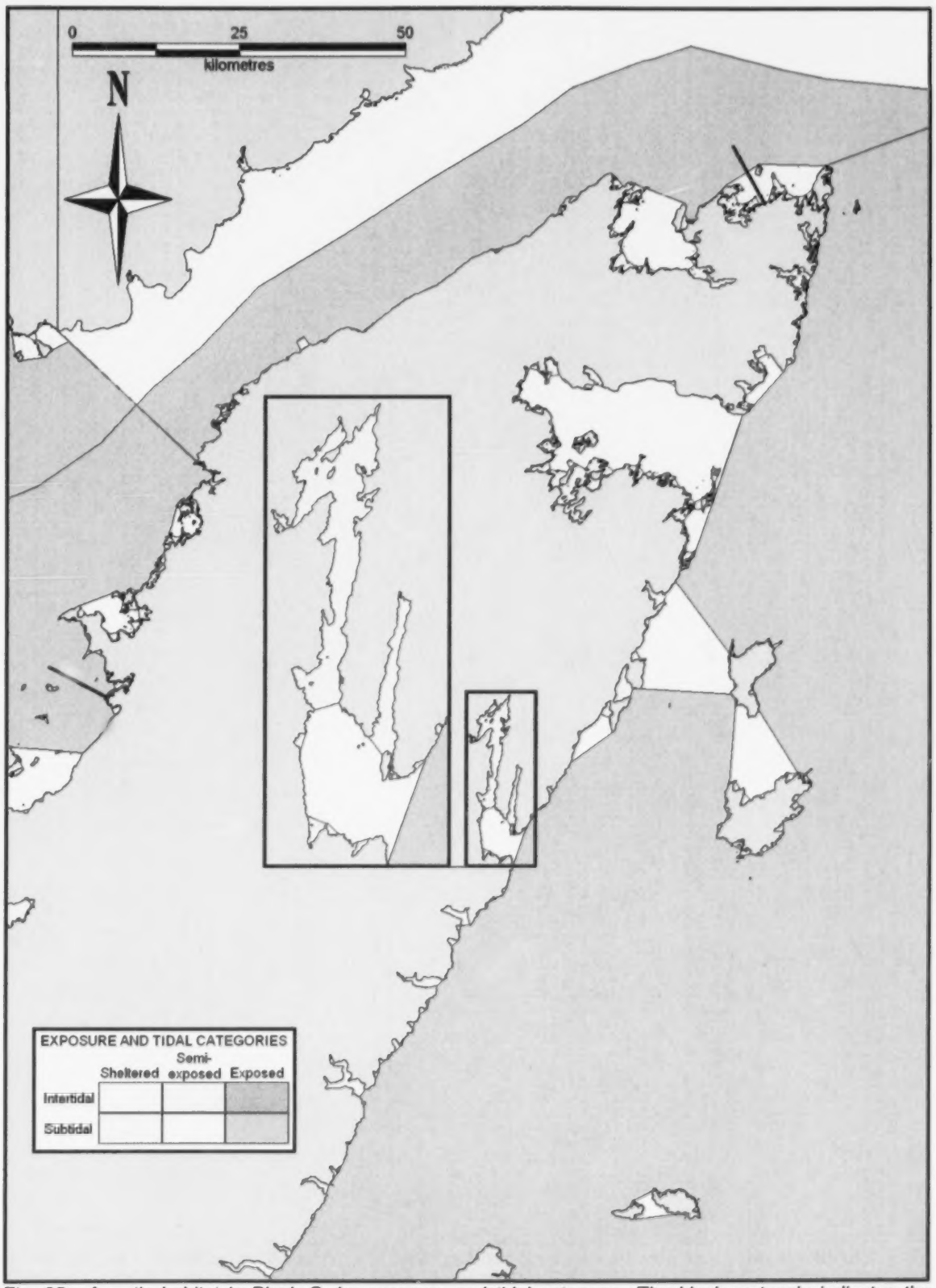

Fig. 25. Aquatic habitat in Block O, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

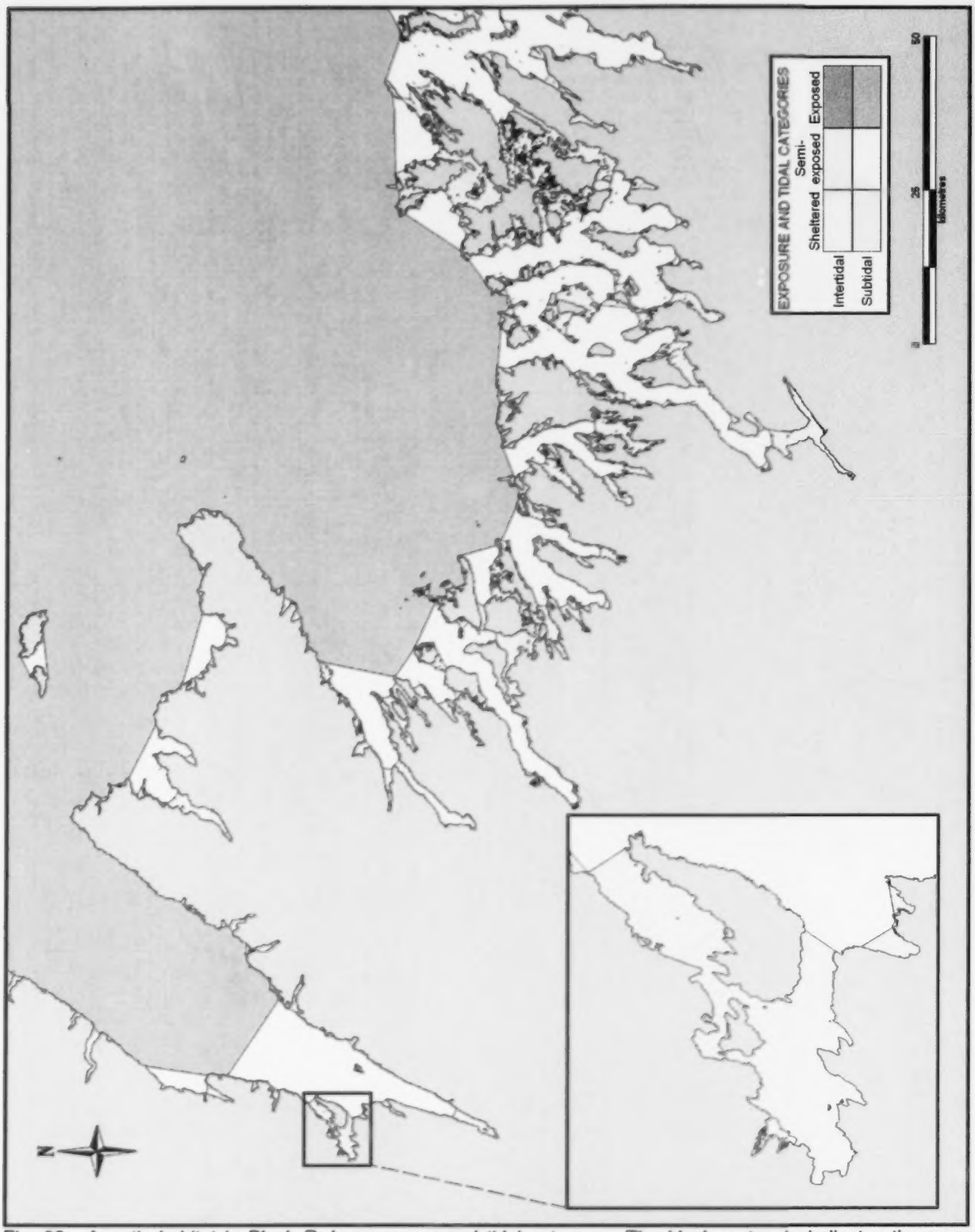

Fig. 26. Aquatic habitat in Block P, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations.

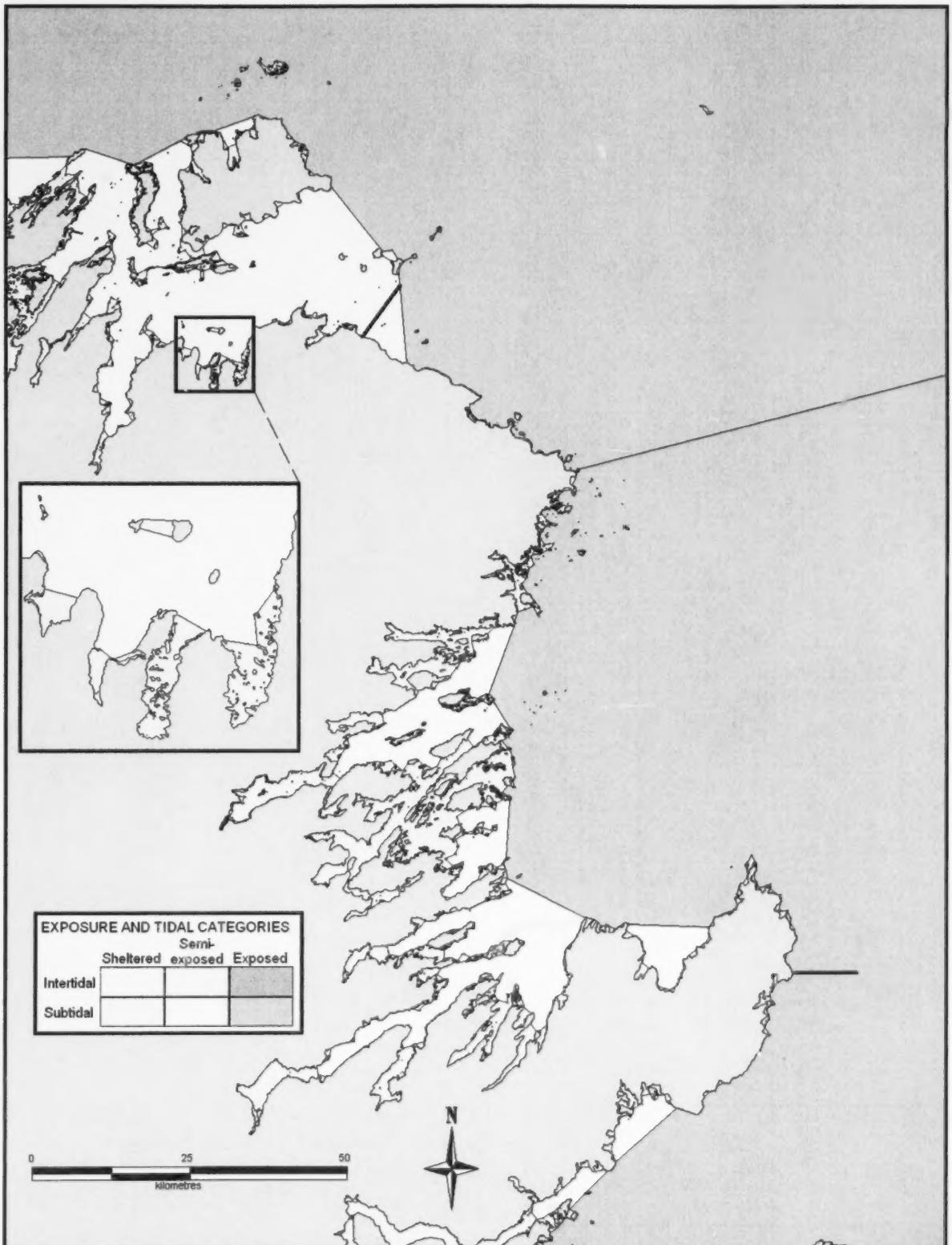

Fig. 27. Aquatic habitat in Block Q, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

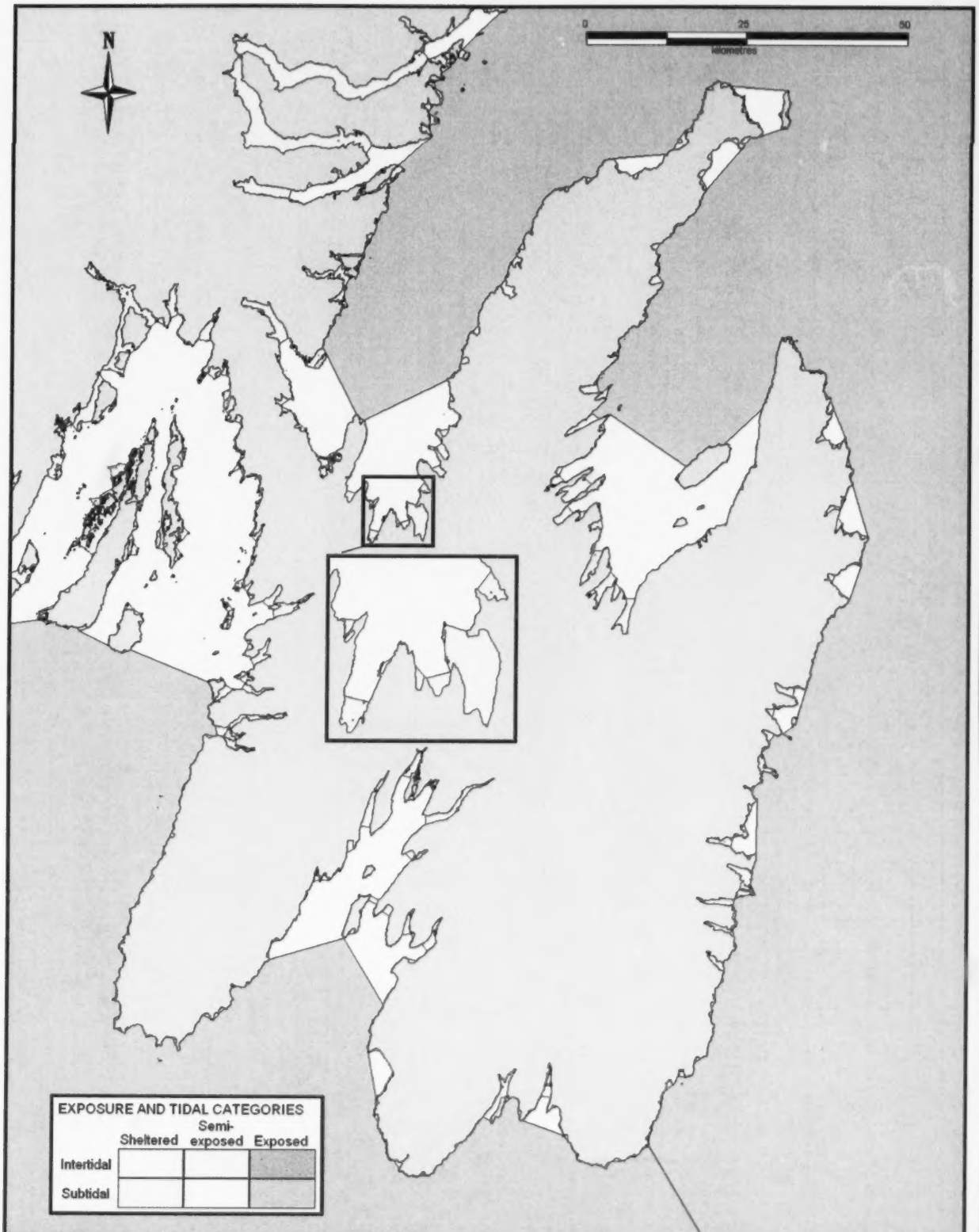

Fig. 28. Aquatic habitat in Block R, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations.

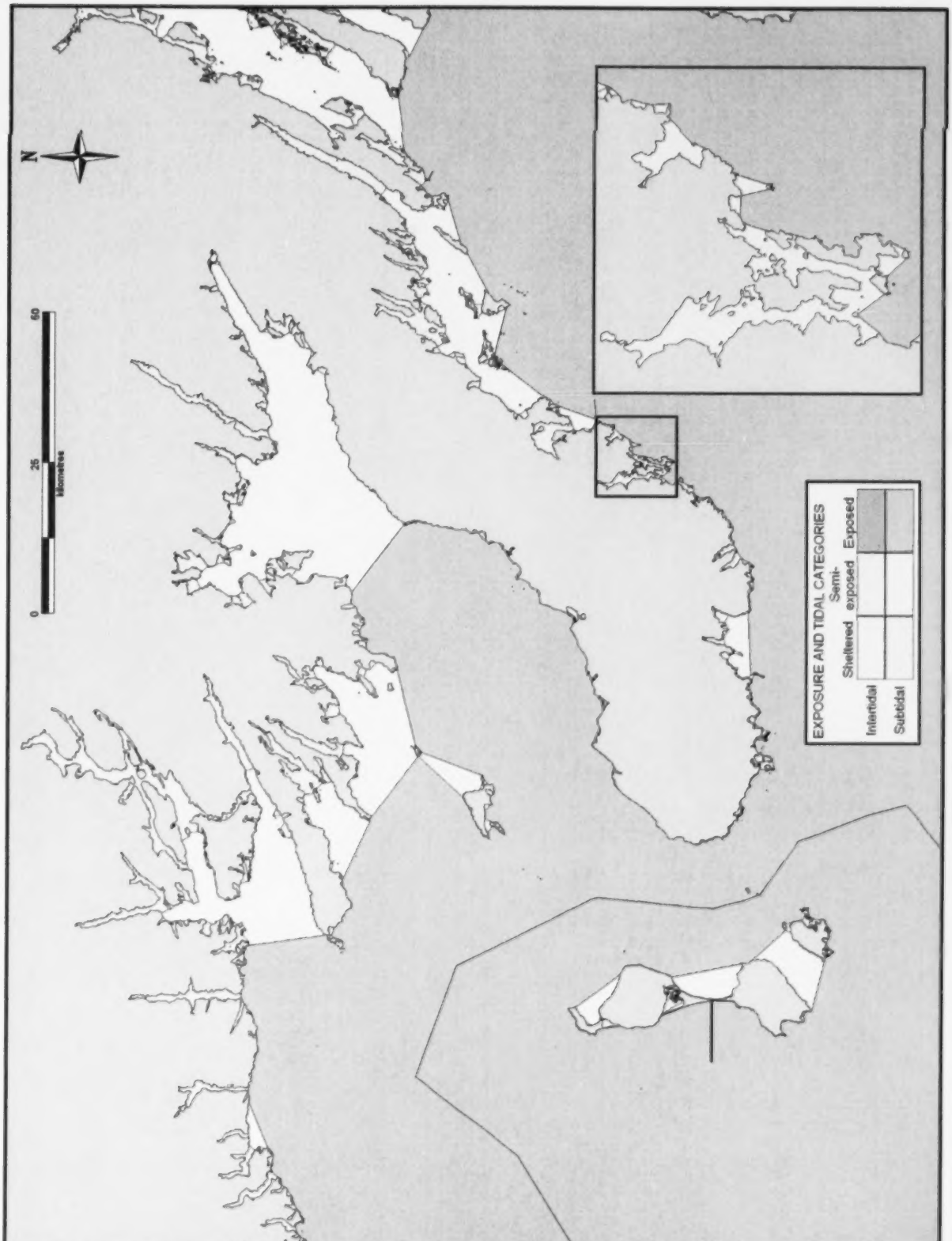

Fig. 29. Aquatic habitat in Block S, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

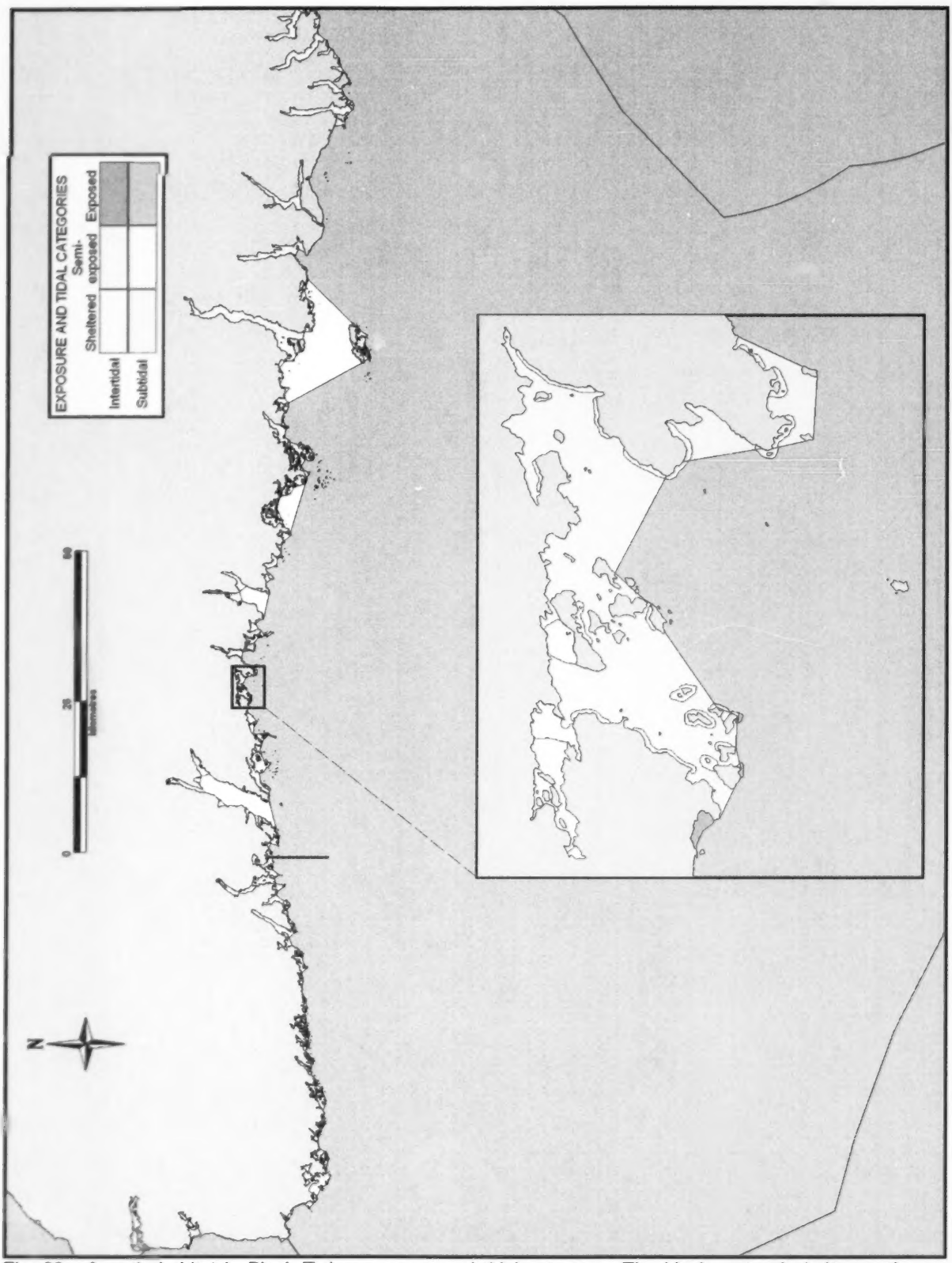

Fig. 30. Aquatic habitat in Block T, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

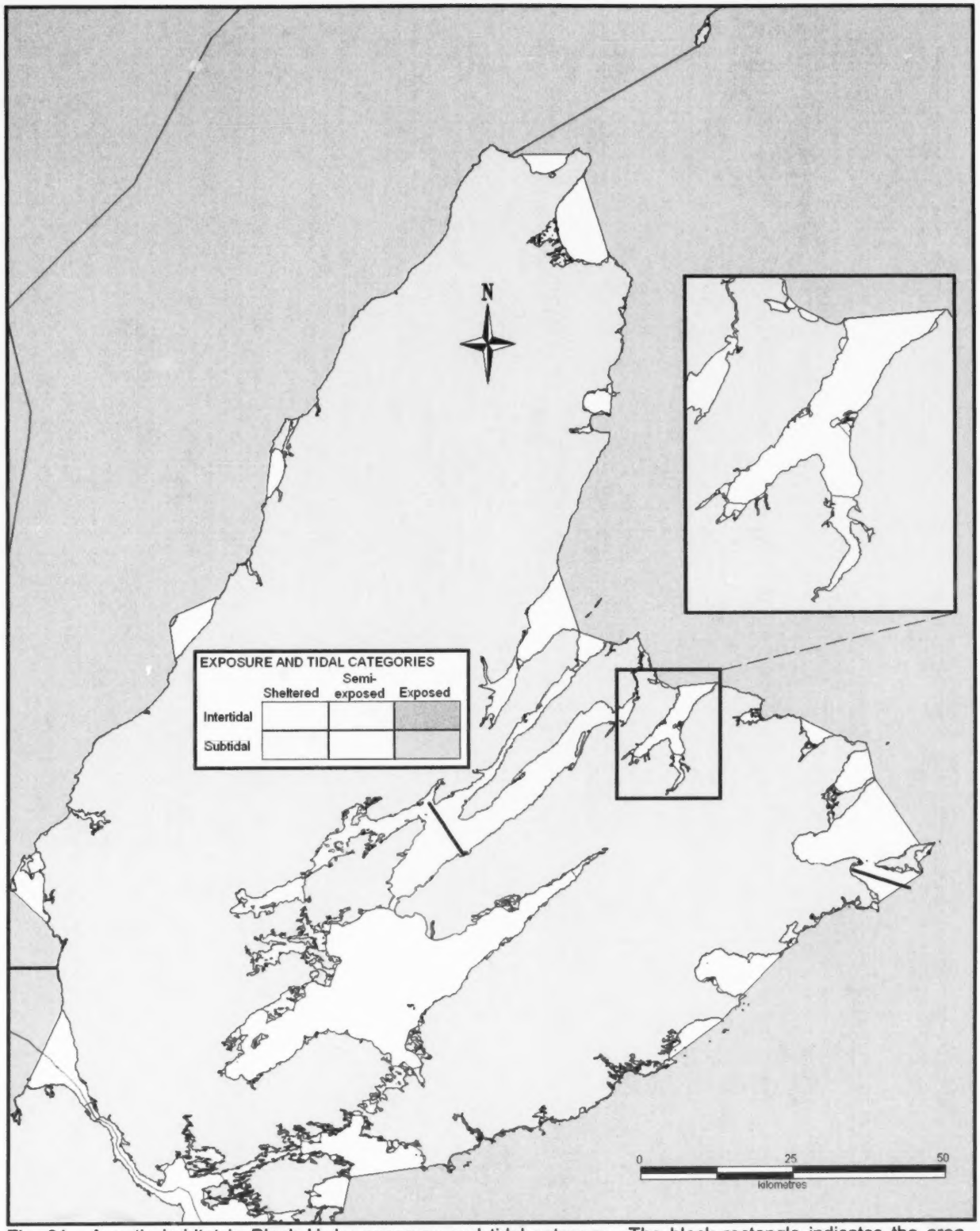

Fig. 31. Aquatic habitat in Block U, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

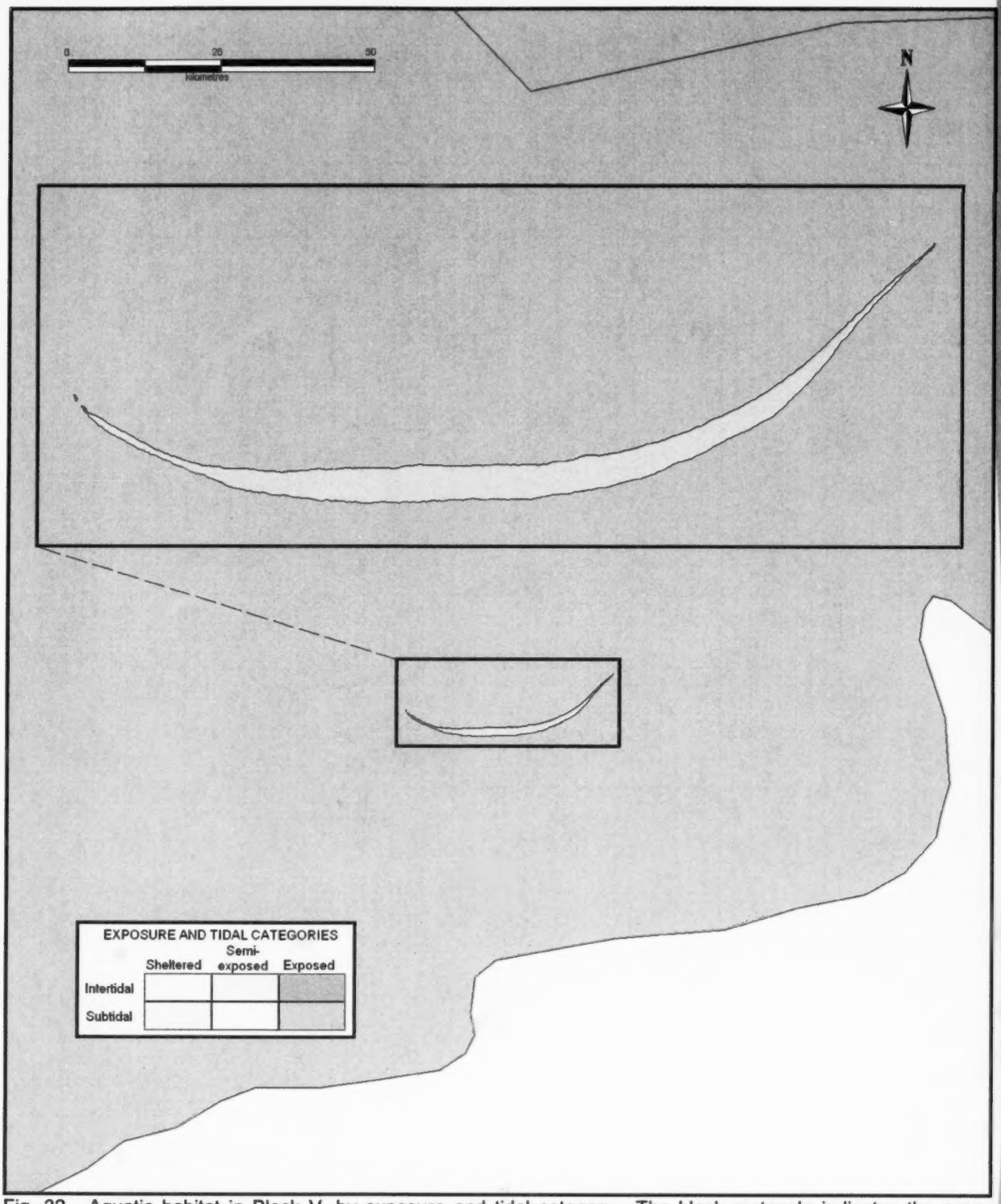

Fig. 32. Aquatic habitat in Block V, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations.

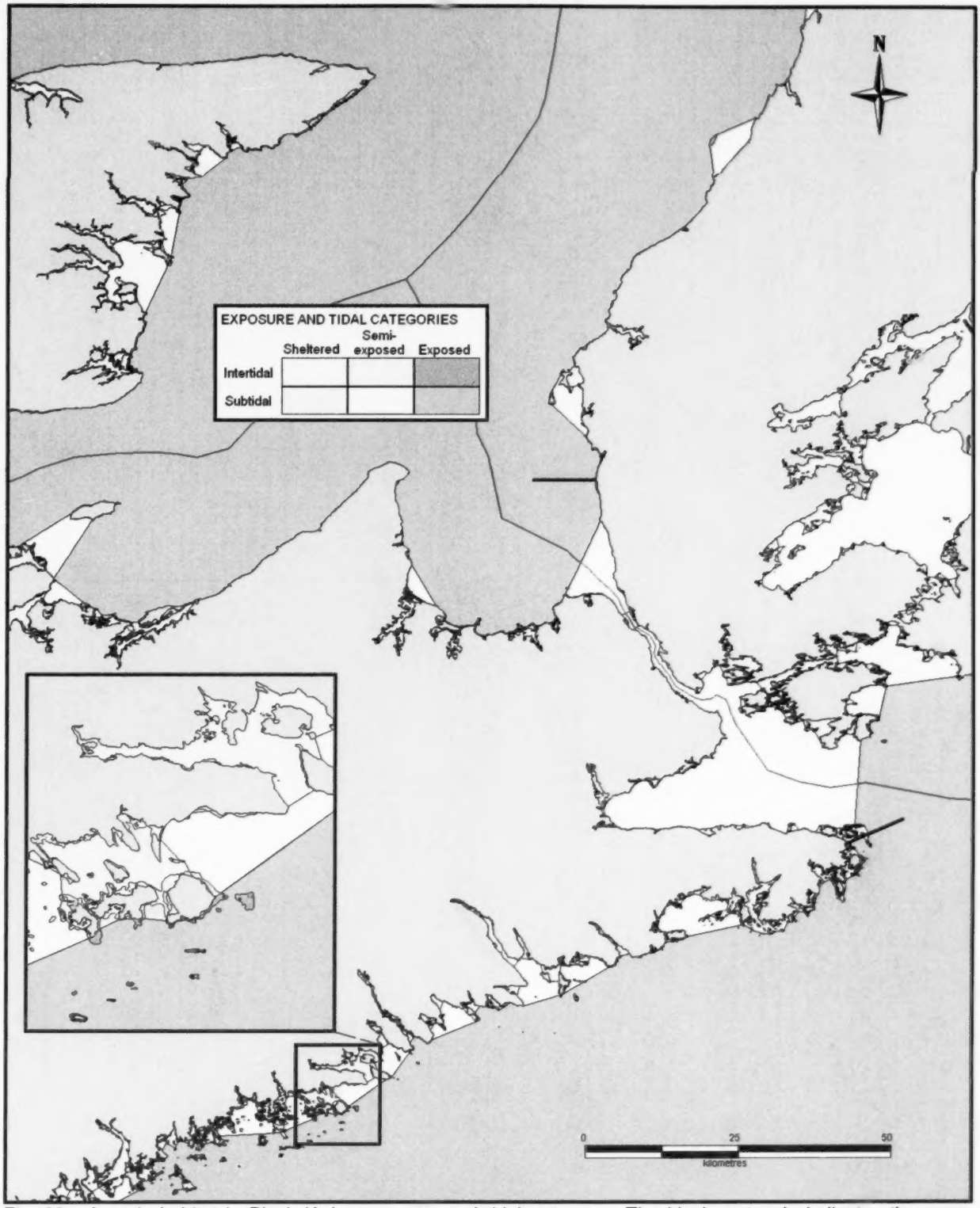

Fig. 33. Aquatic habitat in Block K, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

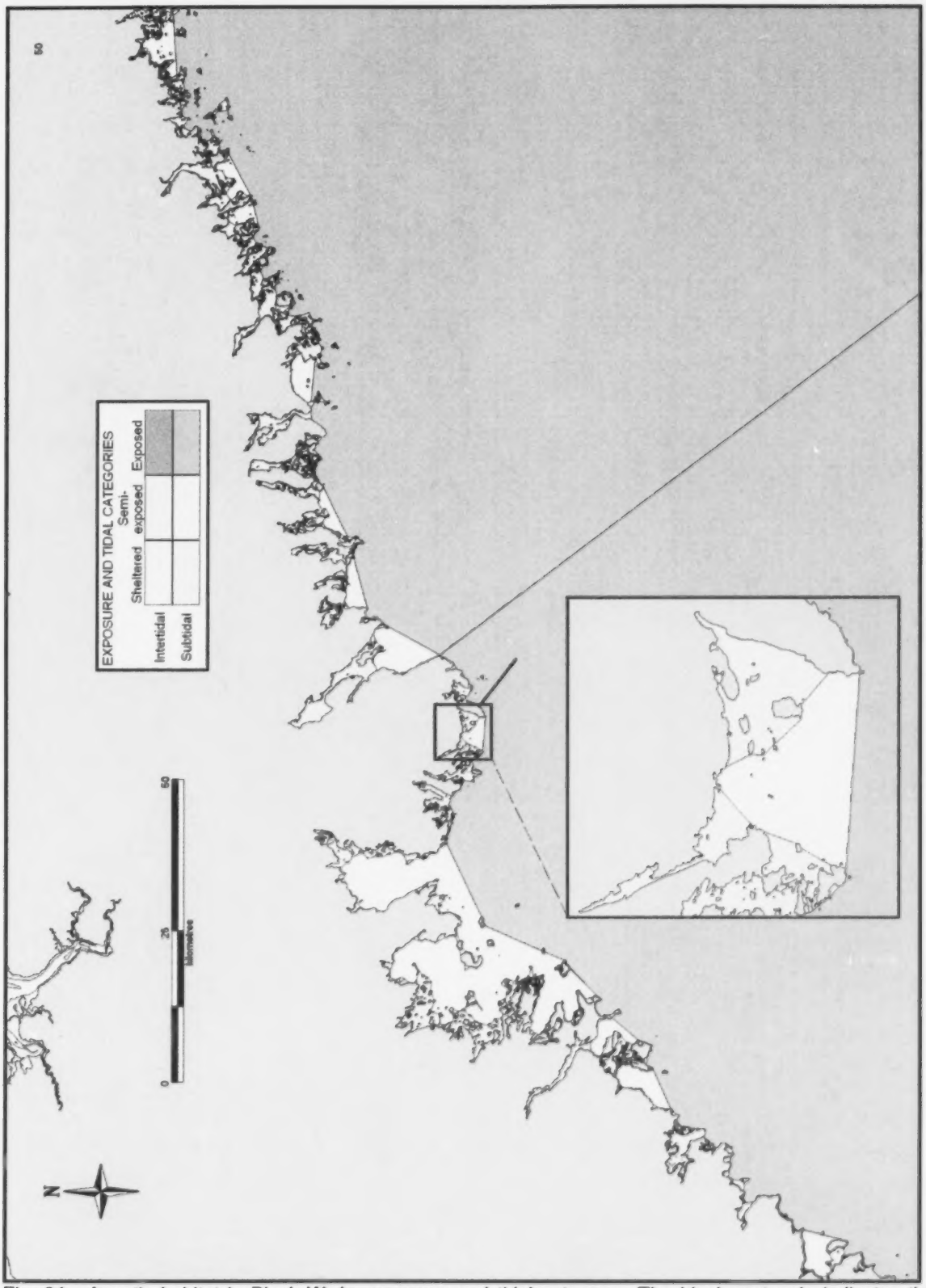

Fig. 34. Aquatic habitat in Block W, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

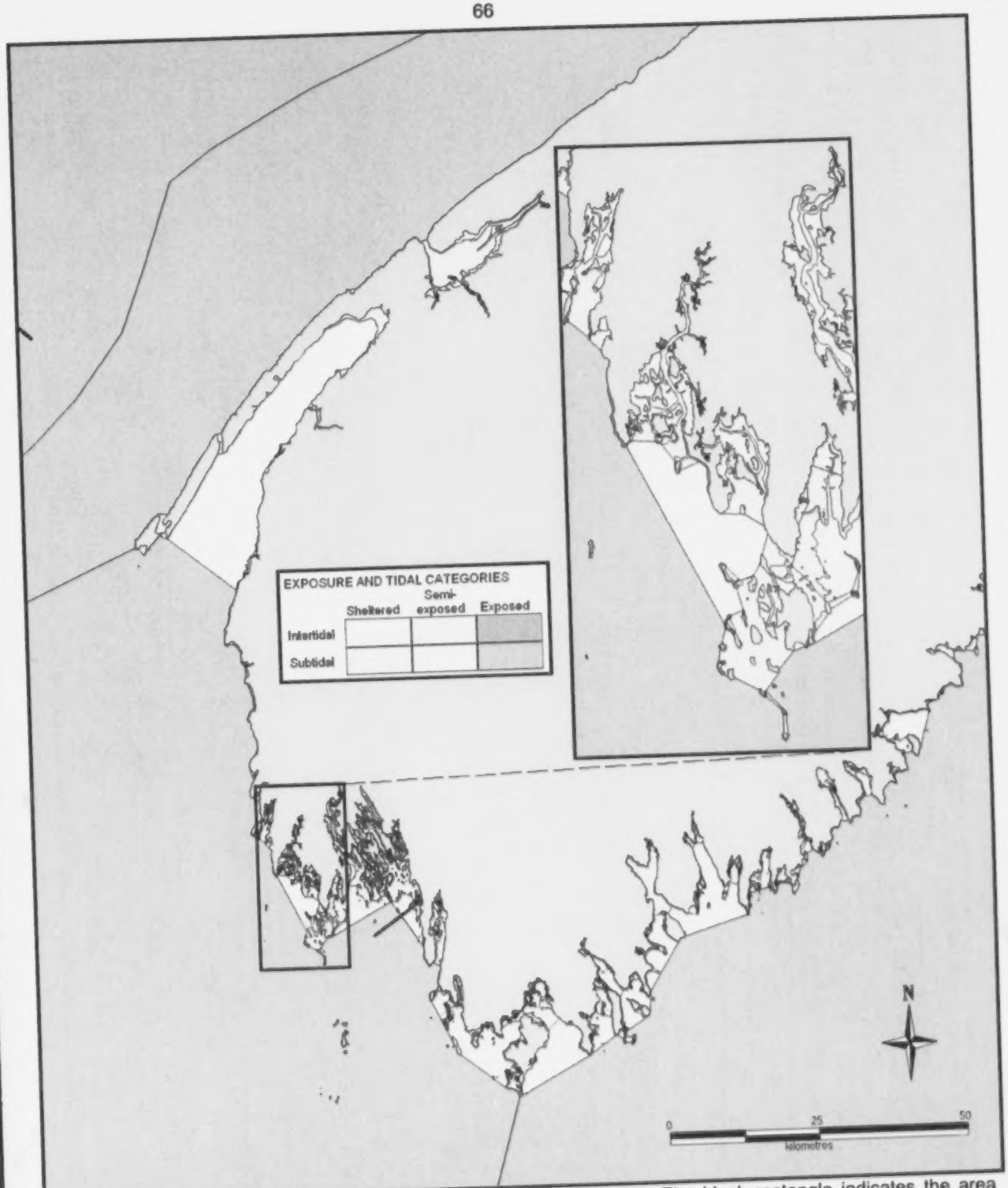

Fig. 35. Aquatic habitat in Block X, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

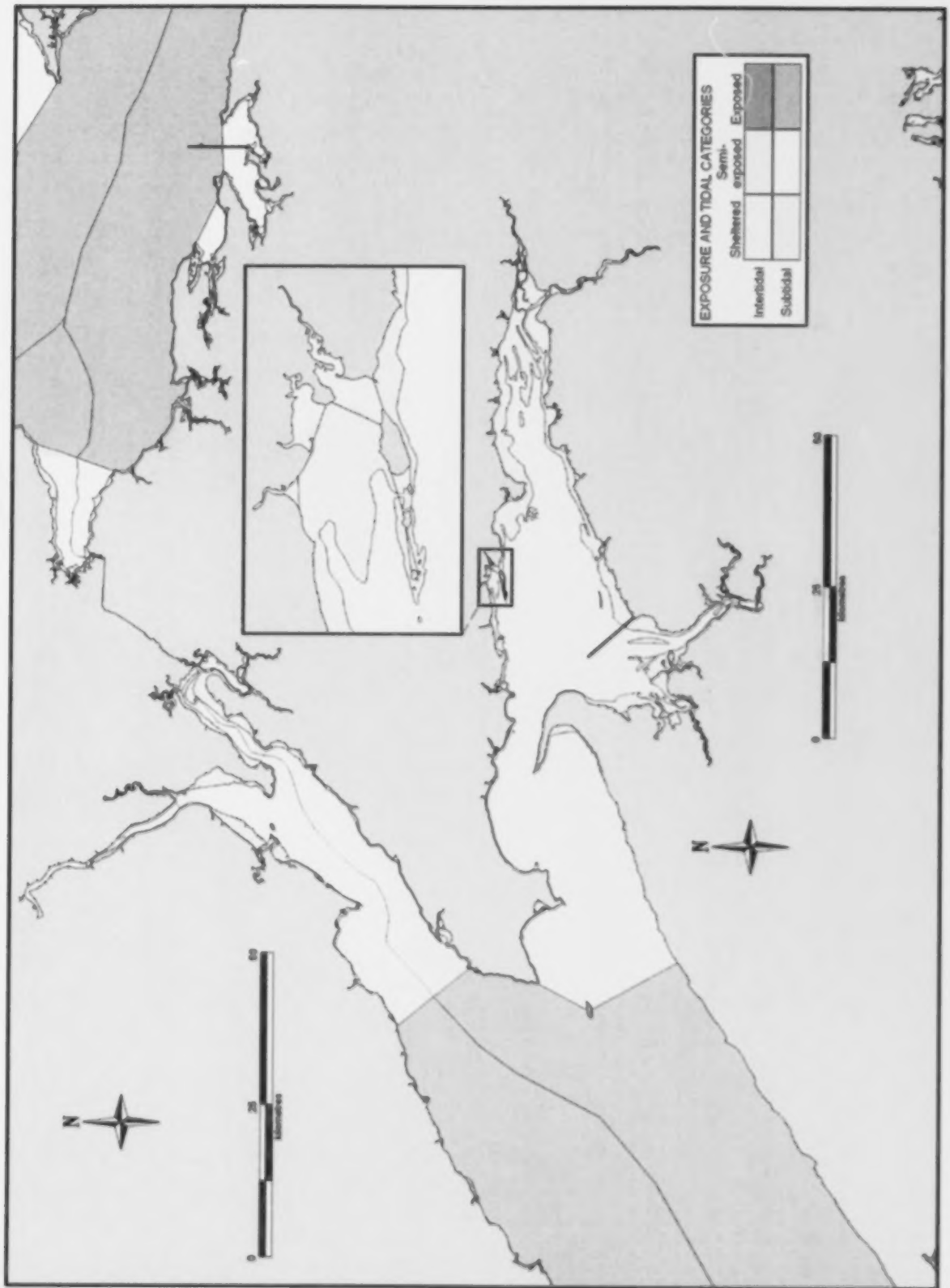

Fig. 36. Aquatic habitat in Block Y, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

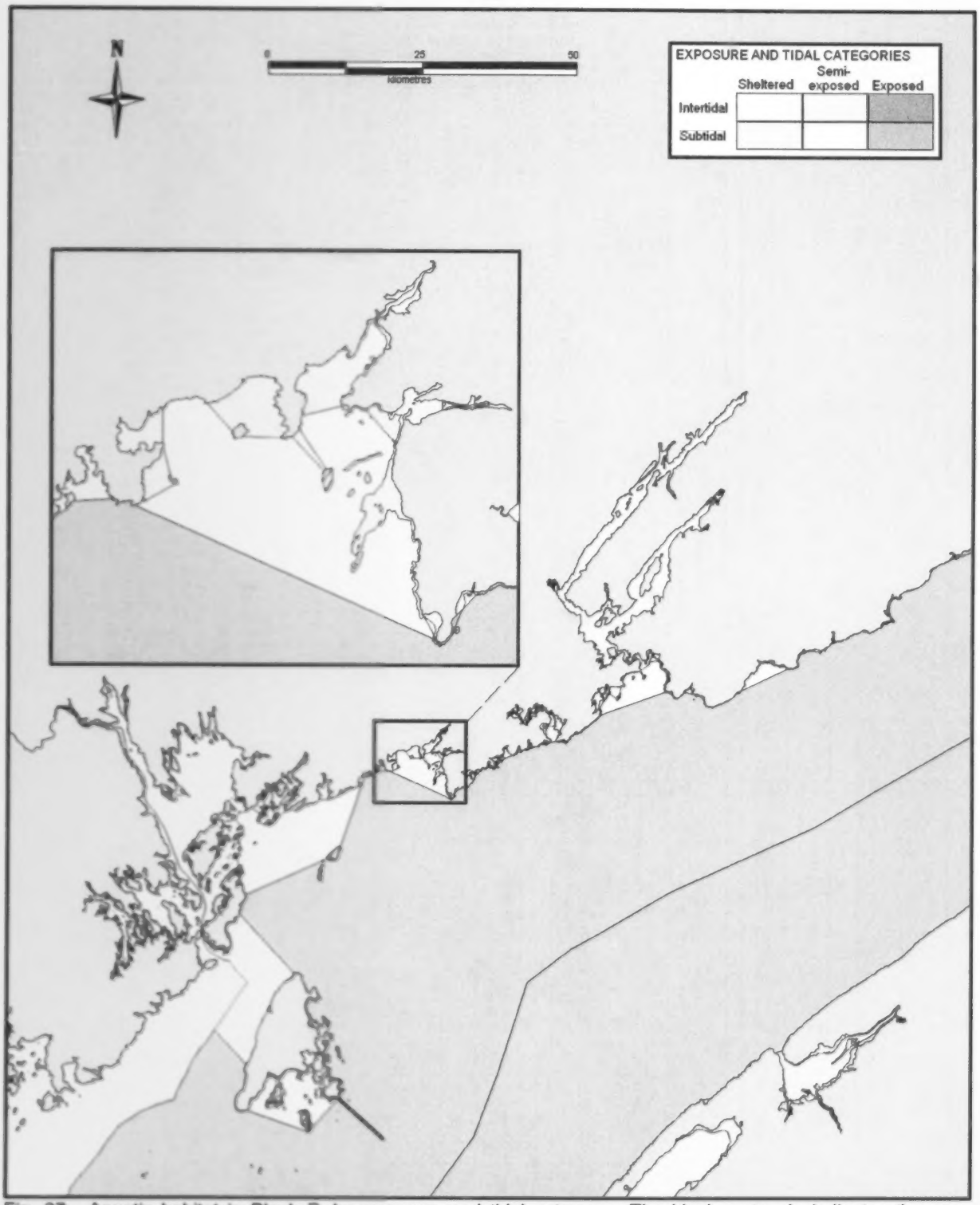

Fig. 37. Aquatic habitat in Block Z, by exposure and tidal category. The black rectangle indicates the area enlarged in the inset map. See Fig. 2 for block locations. Locations of depth profiles (Fig. 41) are shown as black lines.

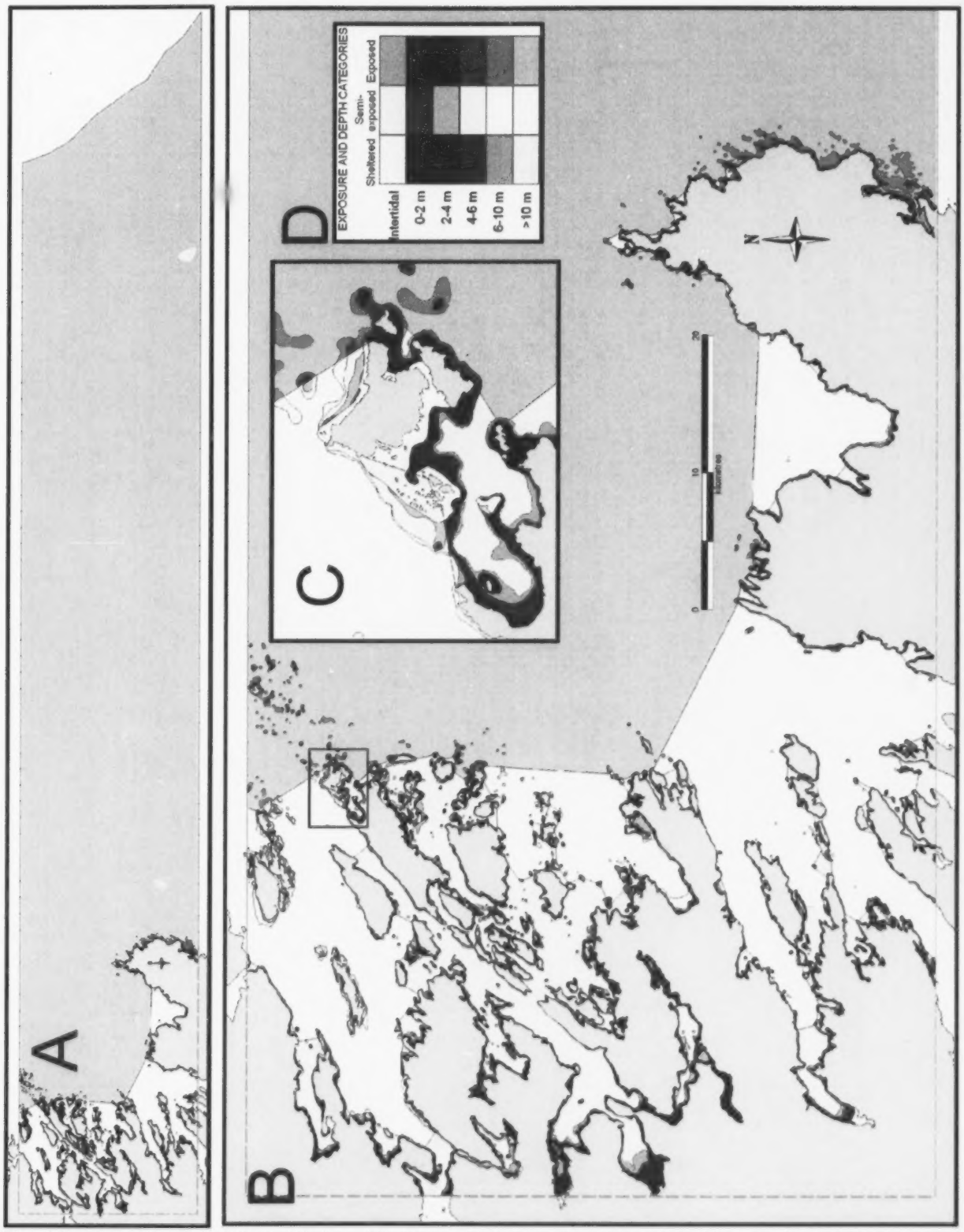

Fig. 38. Aquatic habitat in a 50 km-wide transect running from Bonavista Bay on the northeast coast Newfoundland, to the 500 m depth contour, by exposure category and depth zone. A - entire transect, B - coastal portion of transect, C - enlargement of area bounded by the black rectangle in B, D - legend.

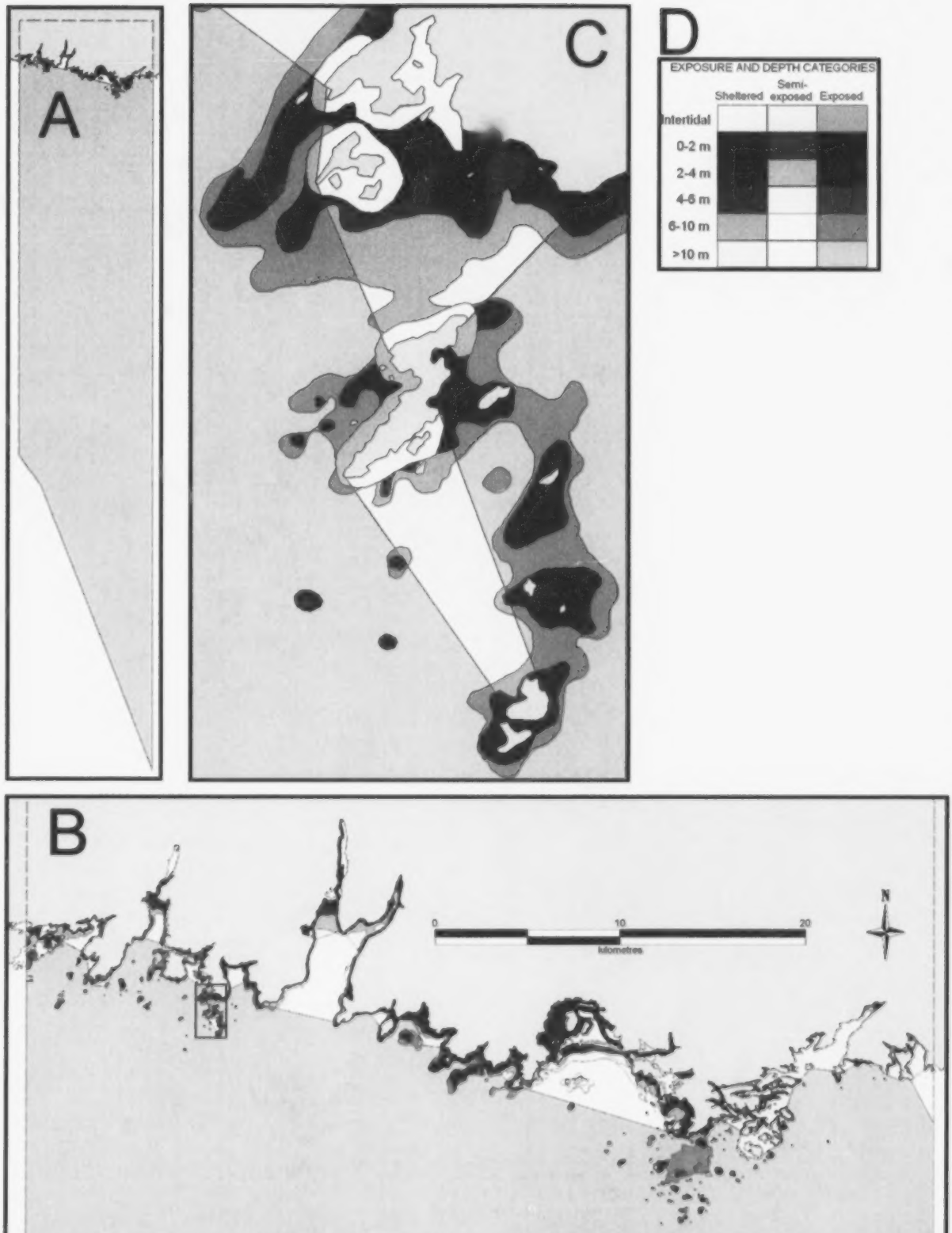

Fig. 39. Aquatic habitat in a 50 km-wide transect running from the south coast of Newfoundland near Burgeo to the 500 m depth contour, by exposure category and depth zone. A - entire transect, B - coastal portion of transect, C - enlargement of area bounded by the black rectangle in B, D - legend.

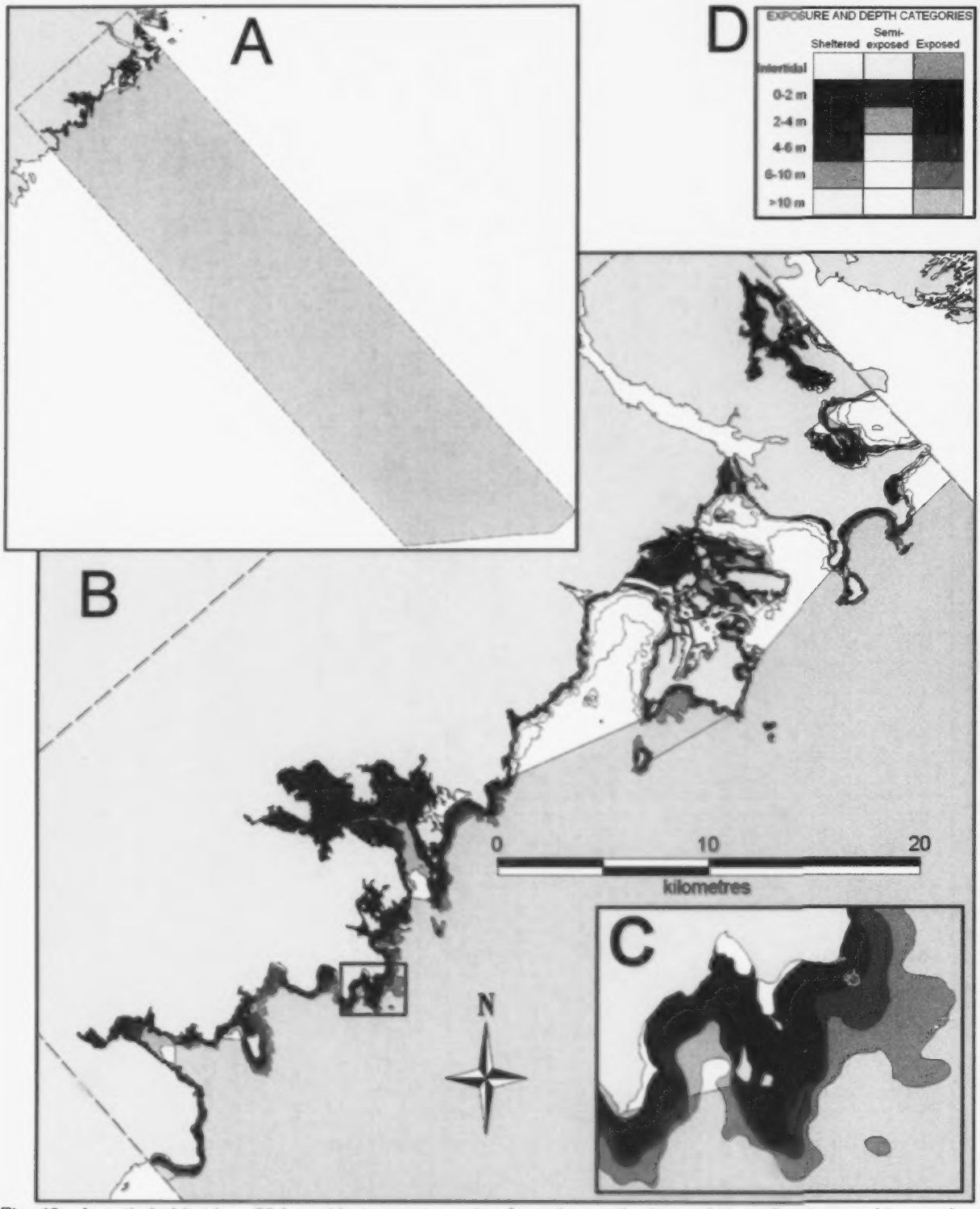

Fig. 40. Aquatic habitat in a 50 km-wide transect running from the south shore of Nova Scotia near Liverpool to the 500 m depth contour, by exposure category and depth zone. A - entire transect, B - coastal portion of transect, C - enlargement of area bounded by the black rectangle in B, D - legend.

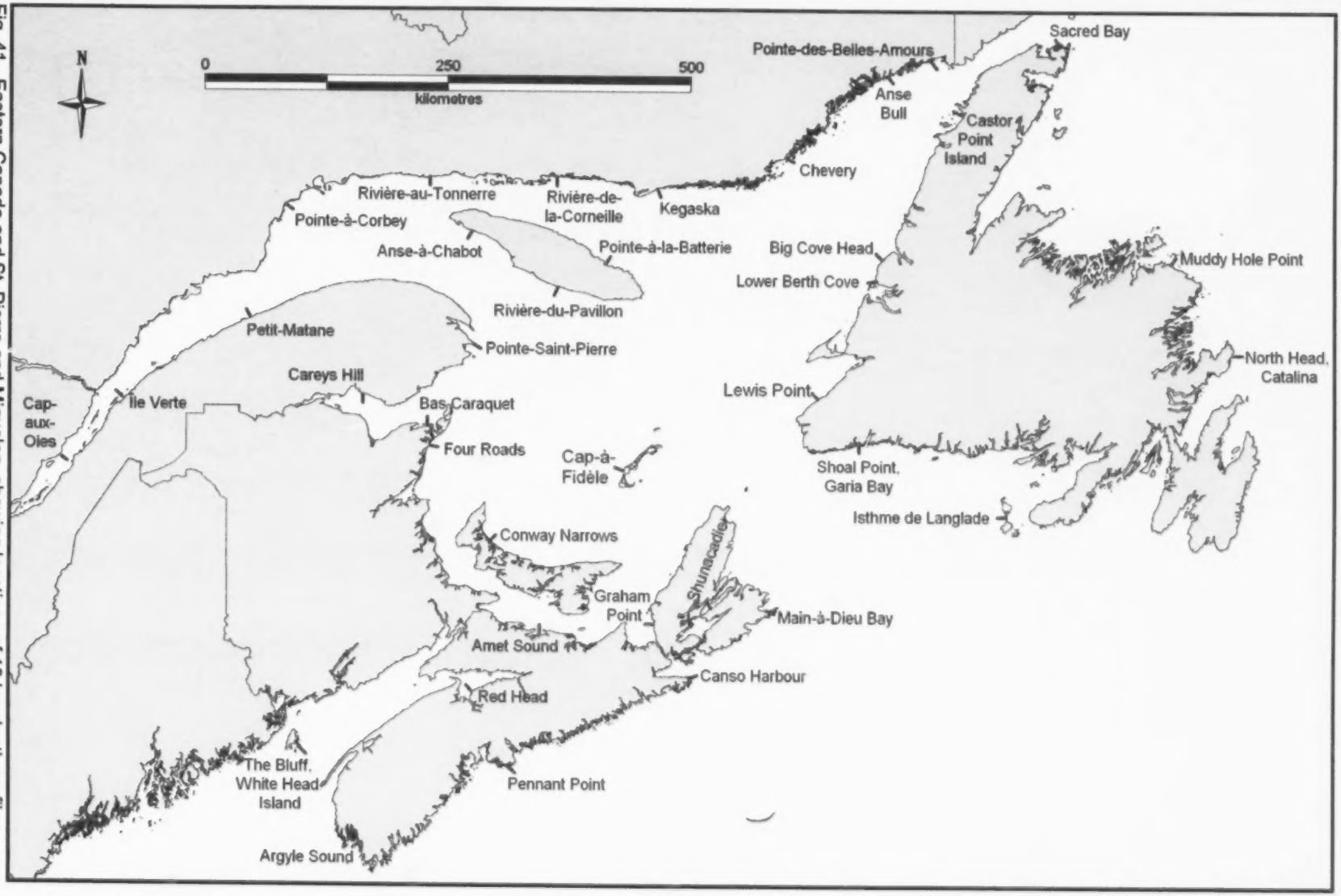

Fig. 41. Eastern Canada and St. Pierre and Miquelon, showing locations of 10 km depth profiles.

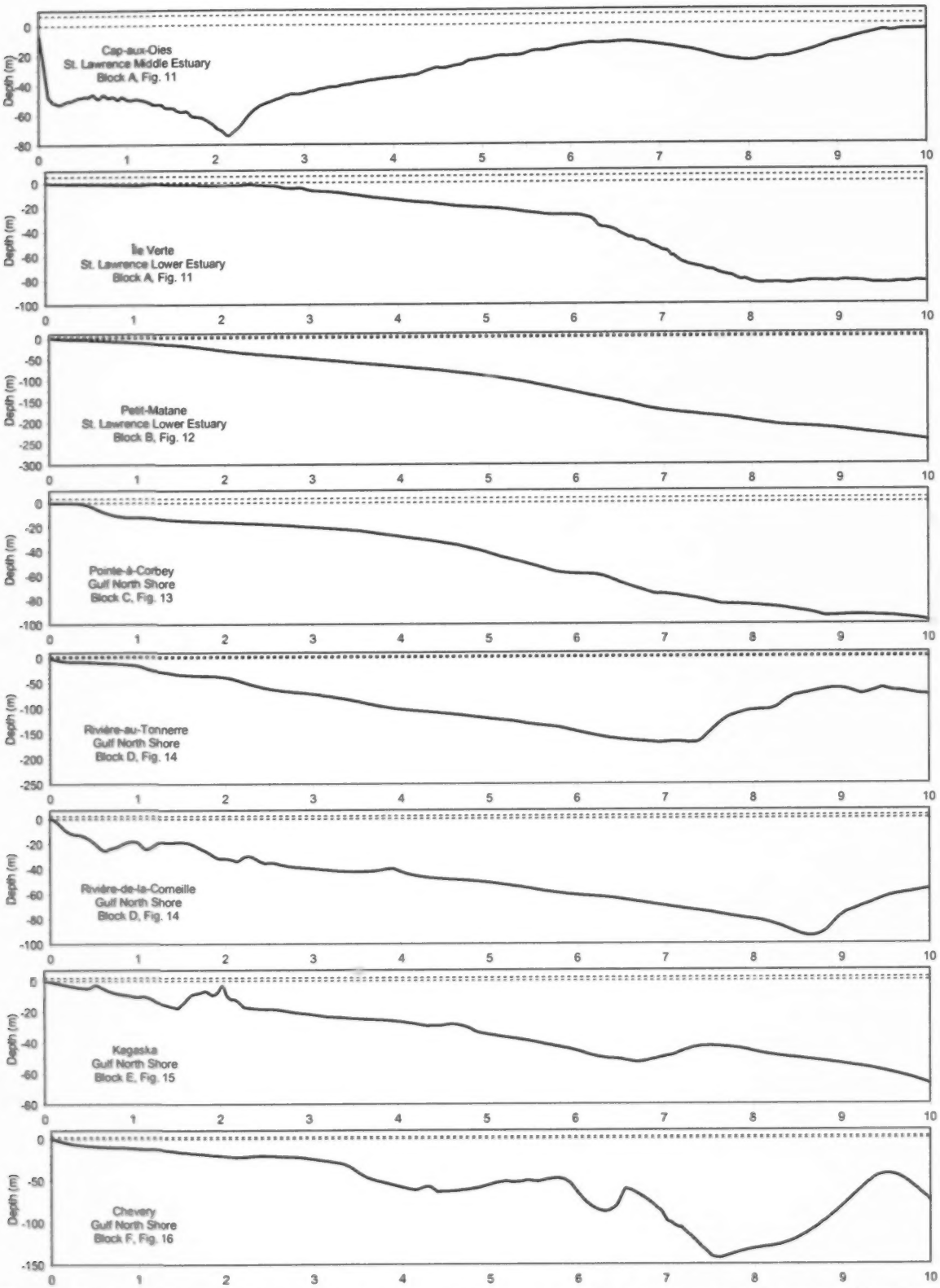

Fig. 42. Depth profiles from the coastline to 10 km offshore in eastern Canada and St. Pierre and Miquelon. The upper dotted line is the approximate maximum tide level and the lower dotted line is chart datum. Profile locations are given in coarse scale in Fig. 39 and in fine scale in the blocks and figures which are listed in each panel.

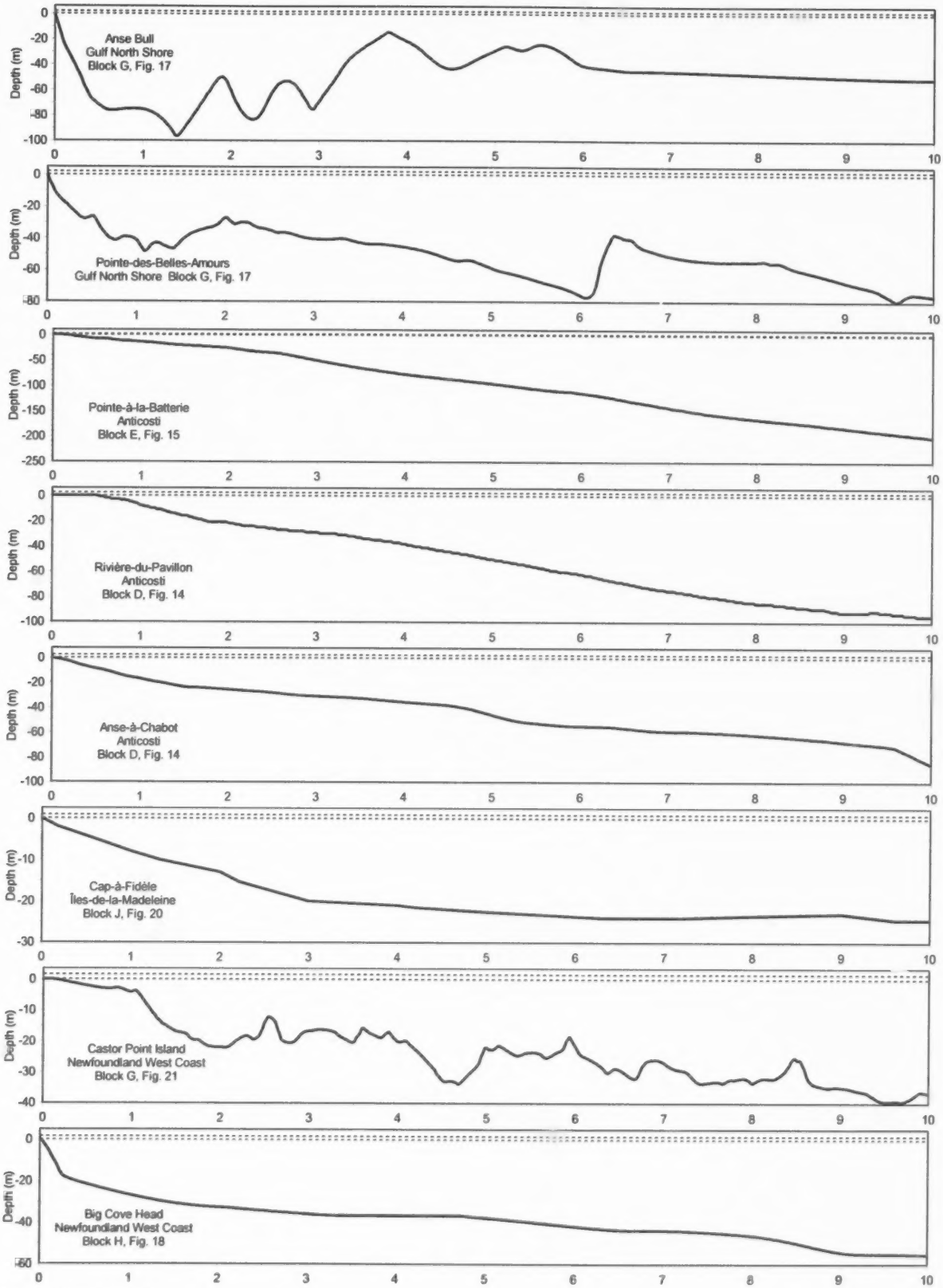

Fig. 42 (continued)

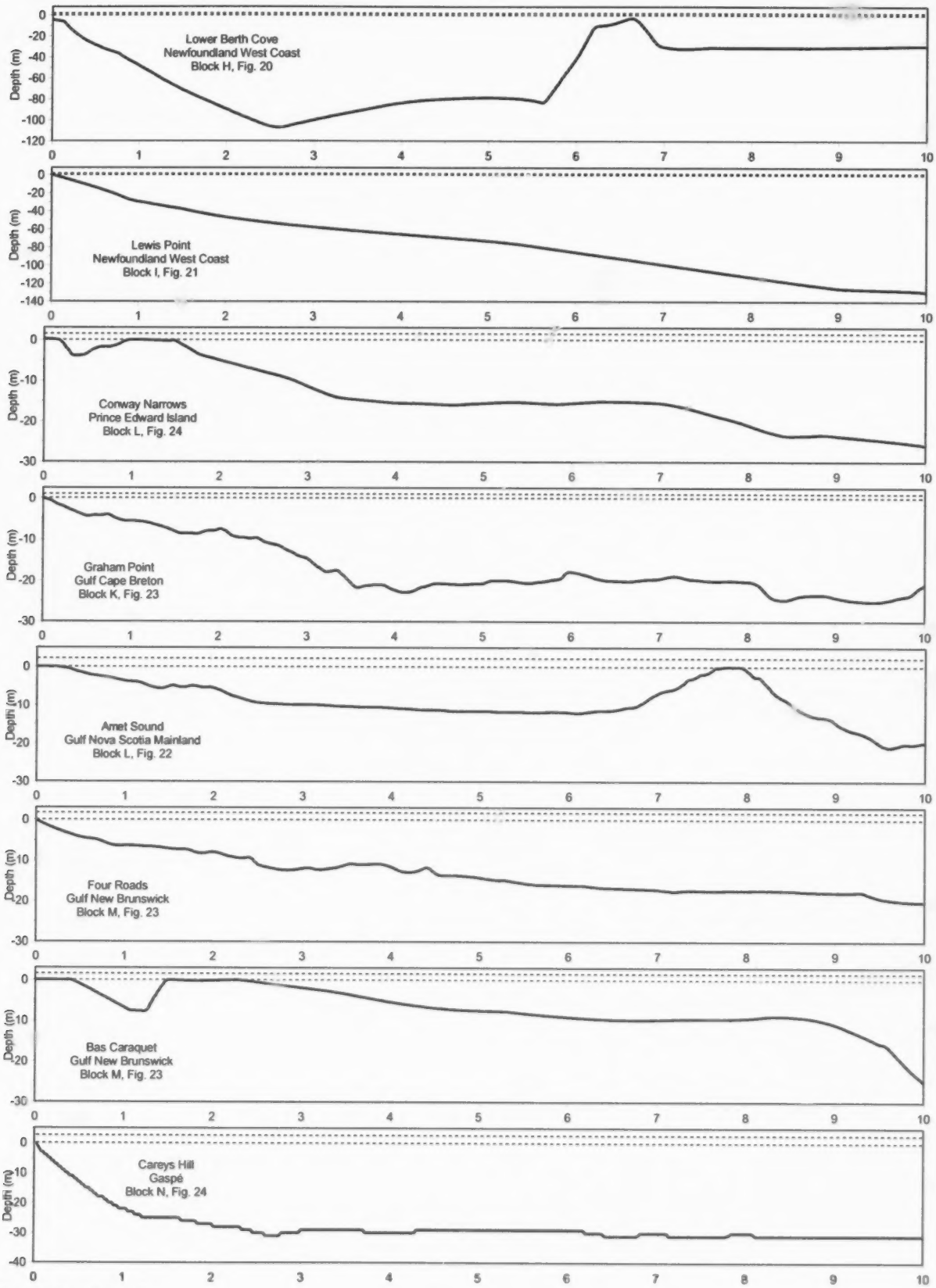

Fig. 42 (continued)

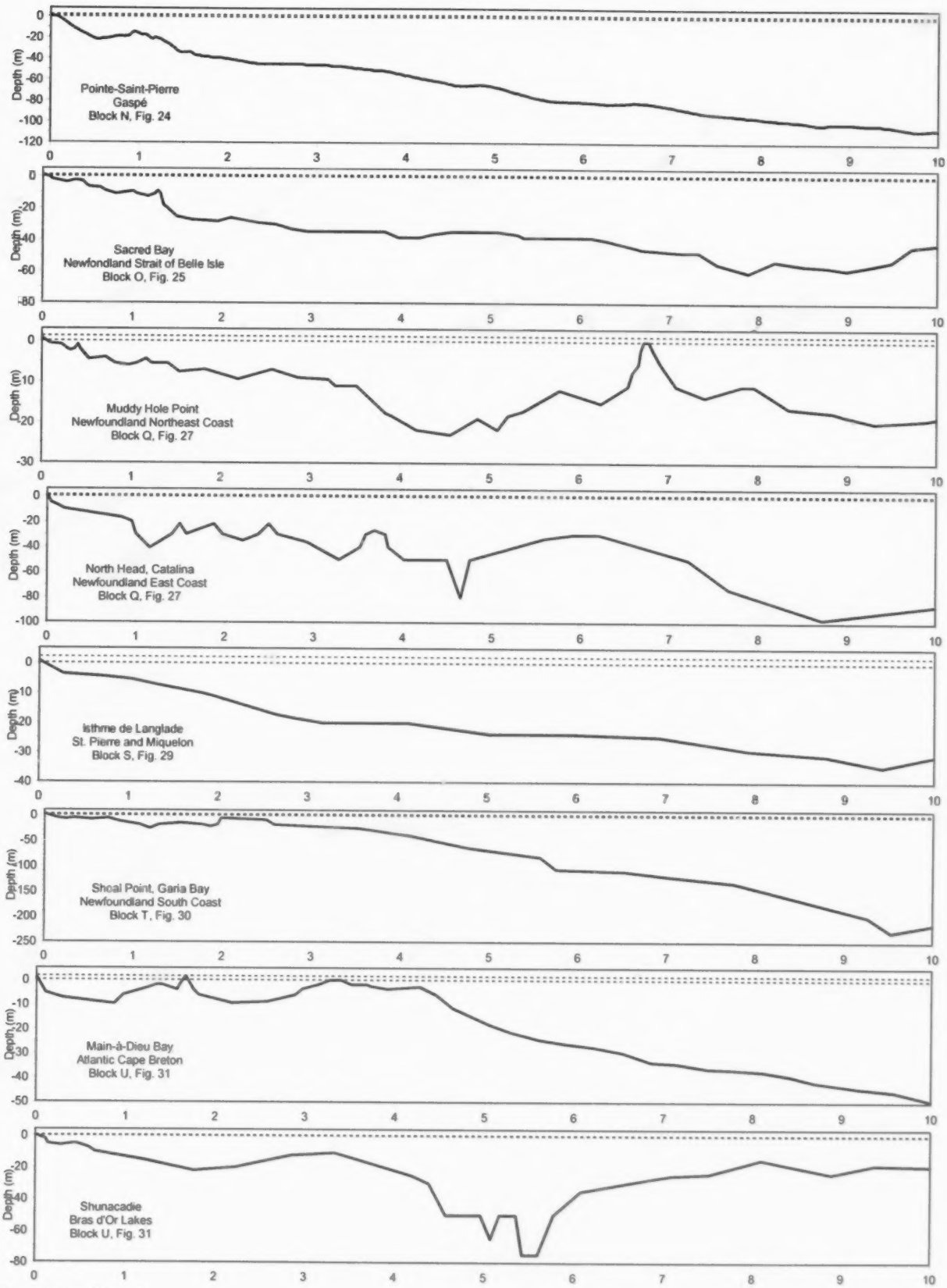

Fig. 42 (continued)

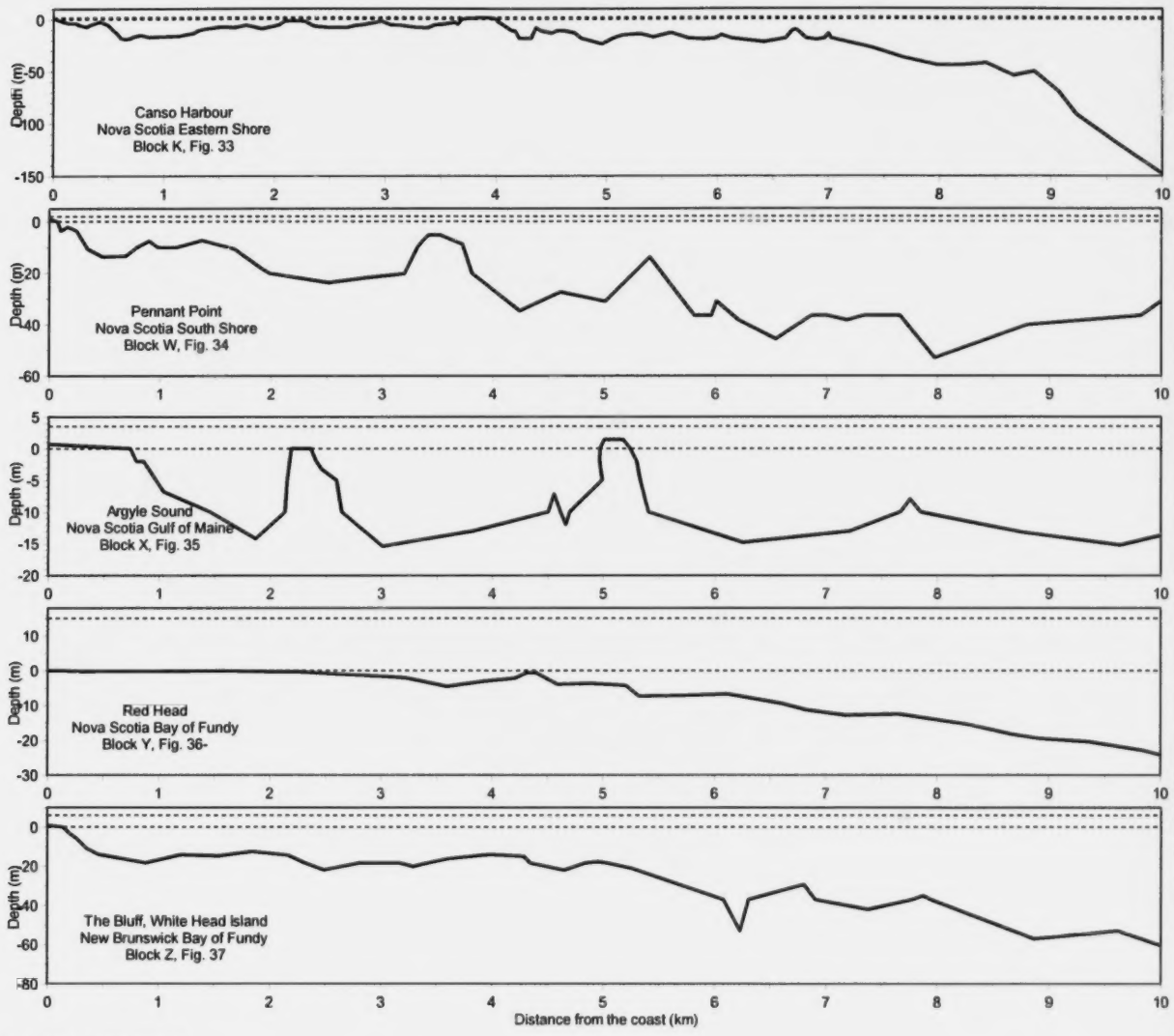

Fig. 42 (continued)

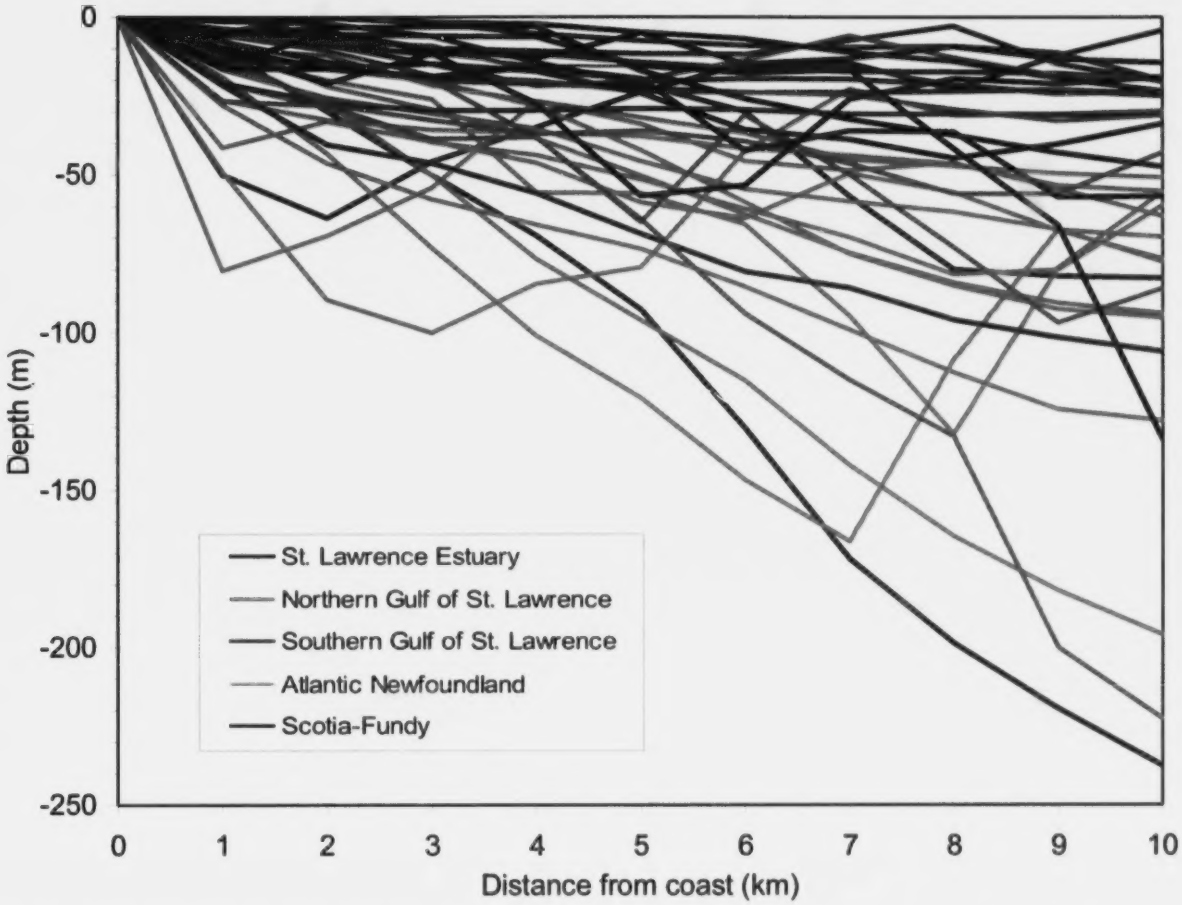

Fig. 43. Combined plot of depth profiles from the coast to 10 km offshore in eastern Canada and St. Pierre and Miquelon.

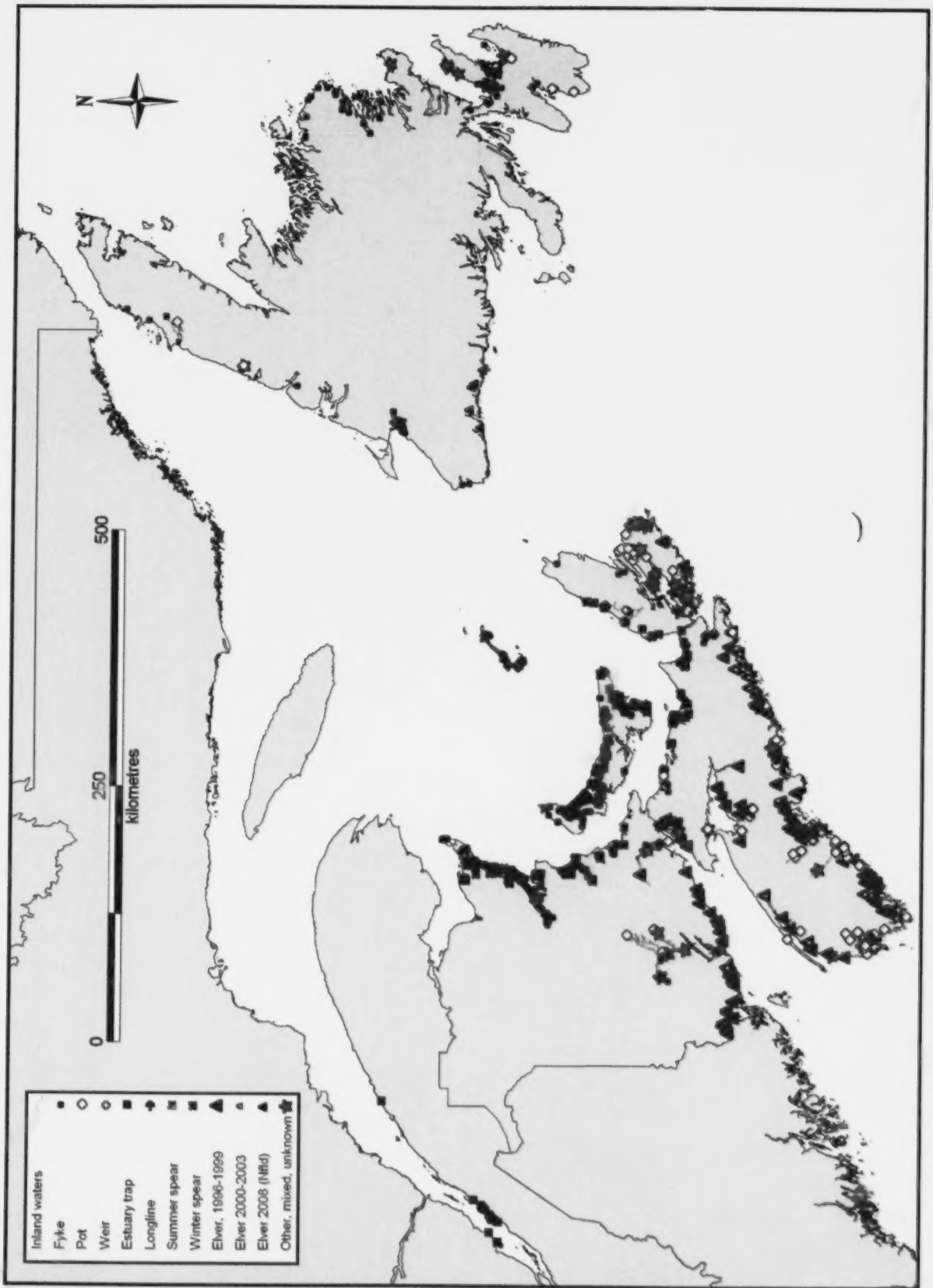

Fig. 44. Locations of eel fishing sites in eastern Canada and St. Pierre and Miquelon.

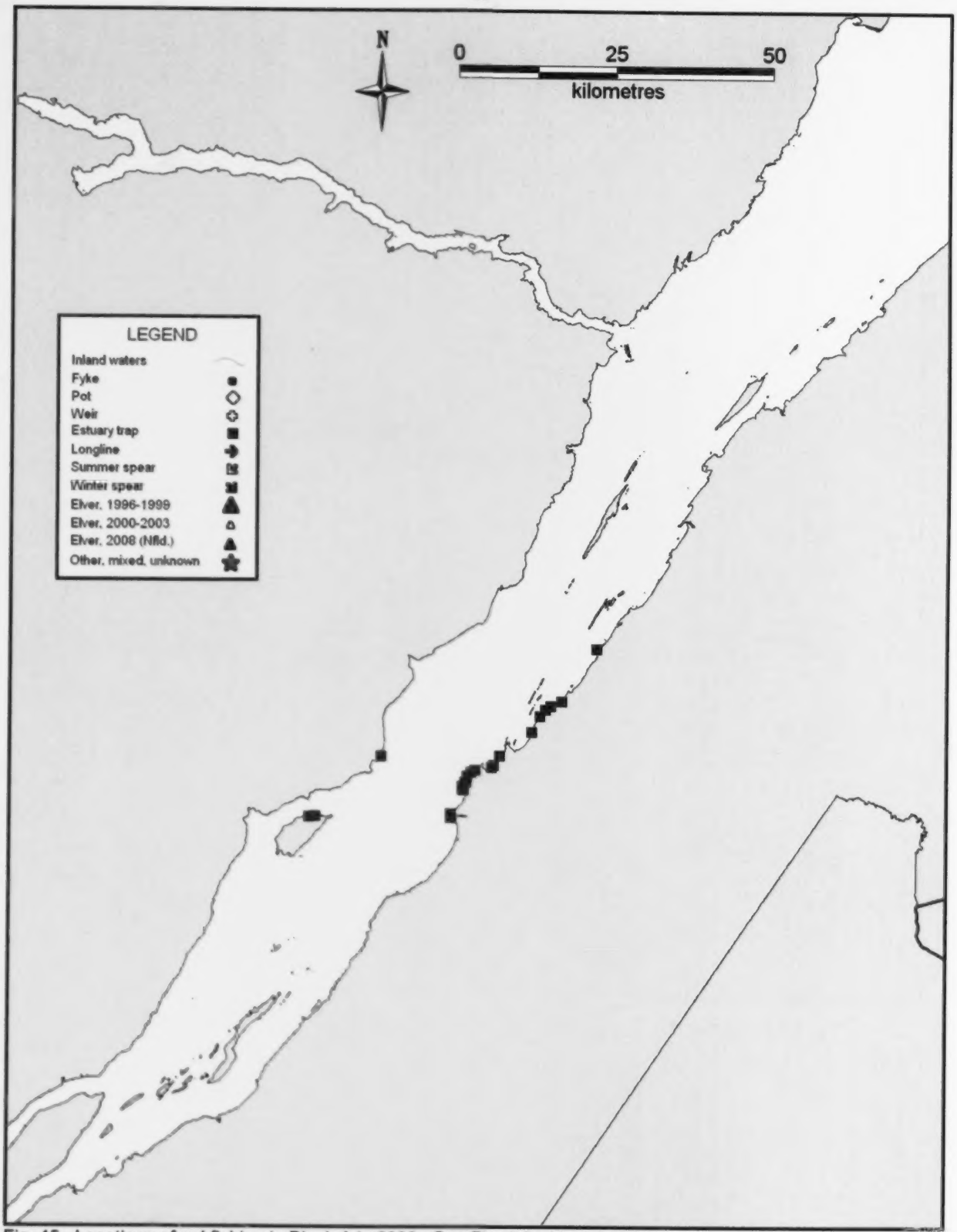

Fig. 45. Locations of eel fishing in Block A in 2009. See Fig. 2 for block locations.

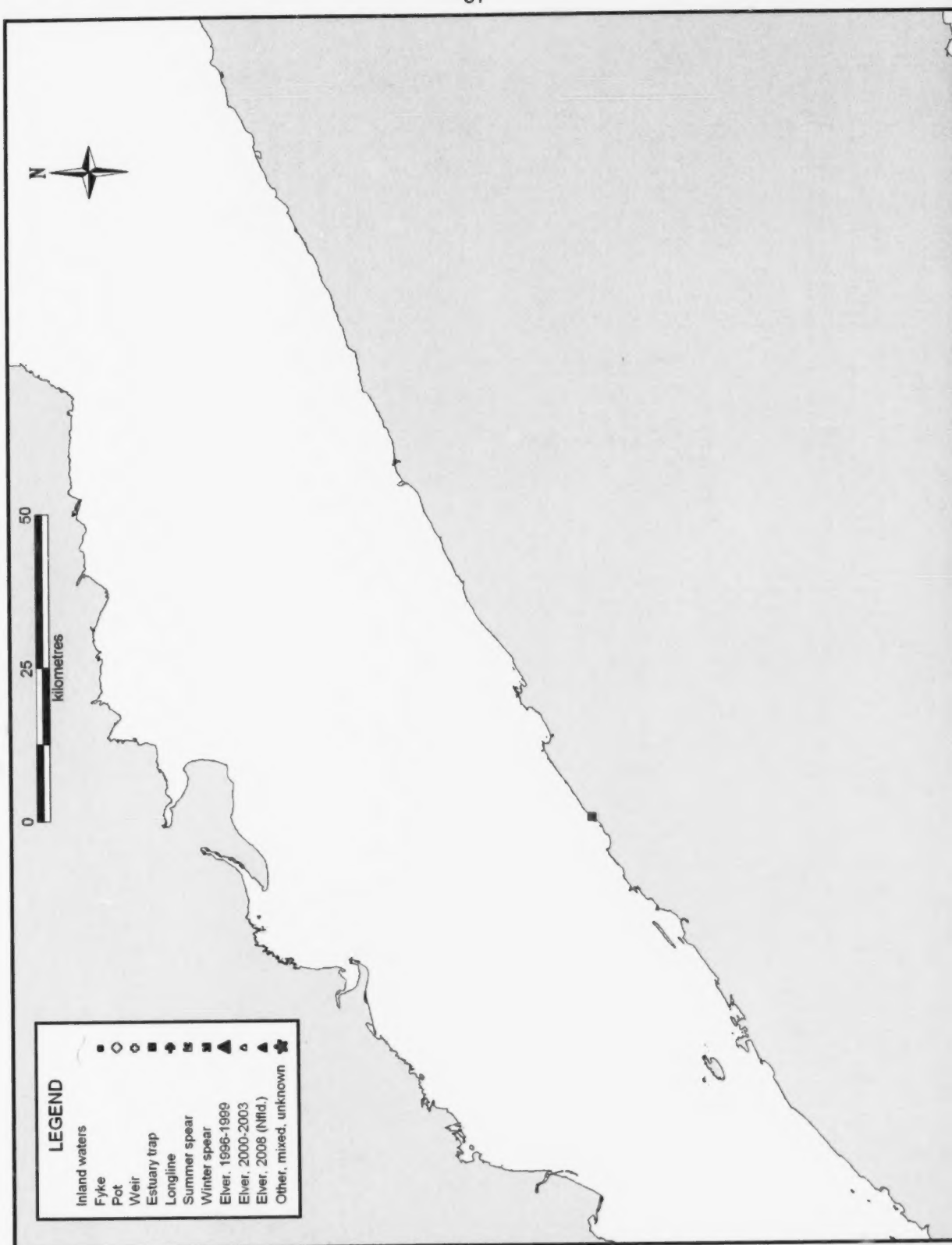

Fig. 46. Locations of eel fishing in Block B in 2009. See Fig. 2 for block locations.

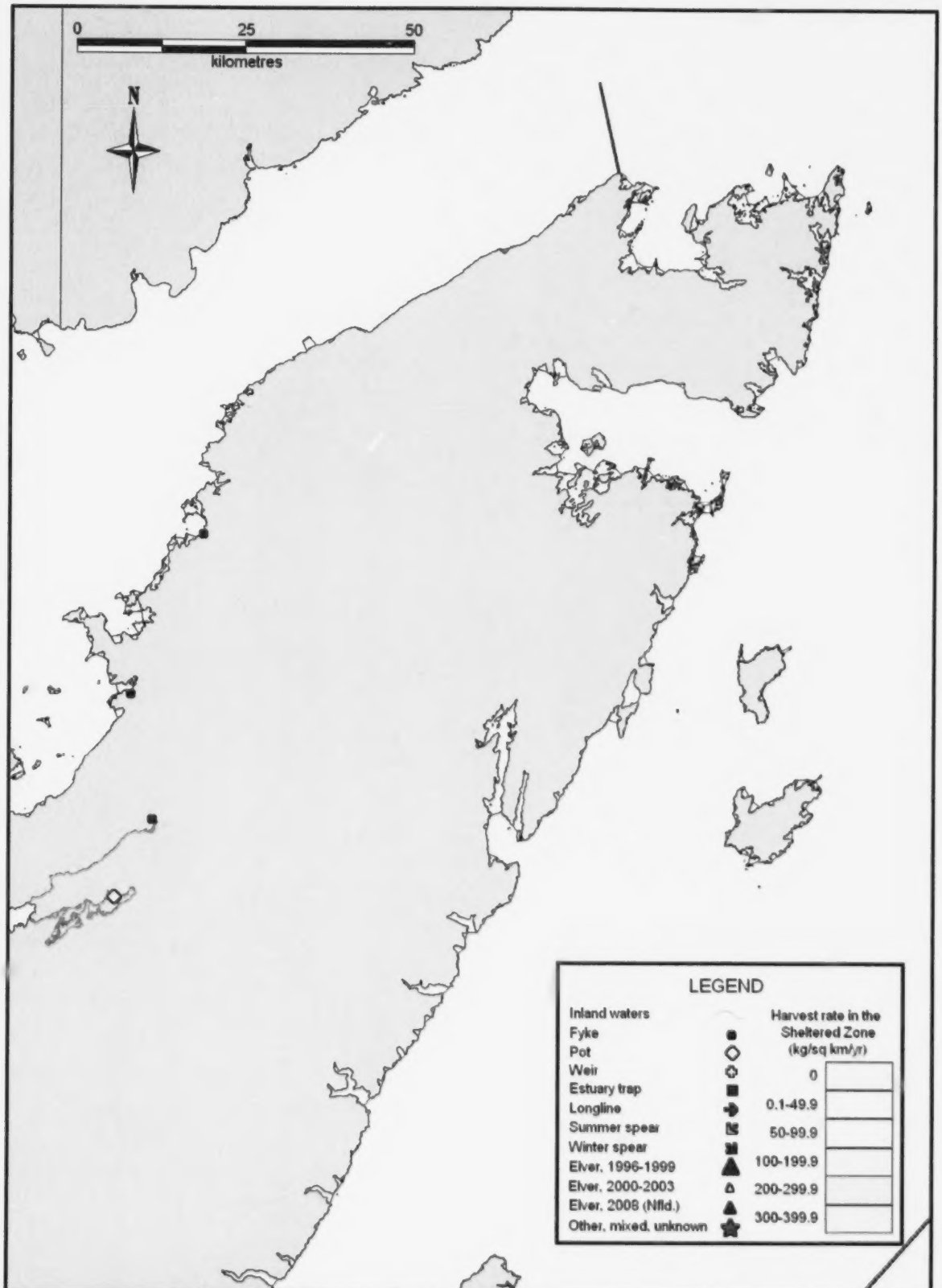

Fig. 47. Locations of eel fishing in 2005 and 2007, and eel harvest rate by Statistical District, in Block 0. See Fig. 2 for block locations.

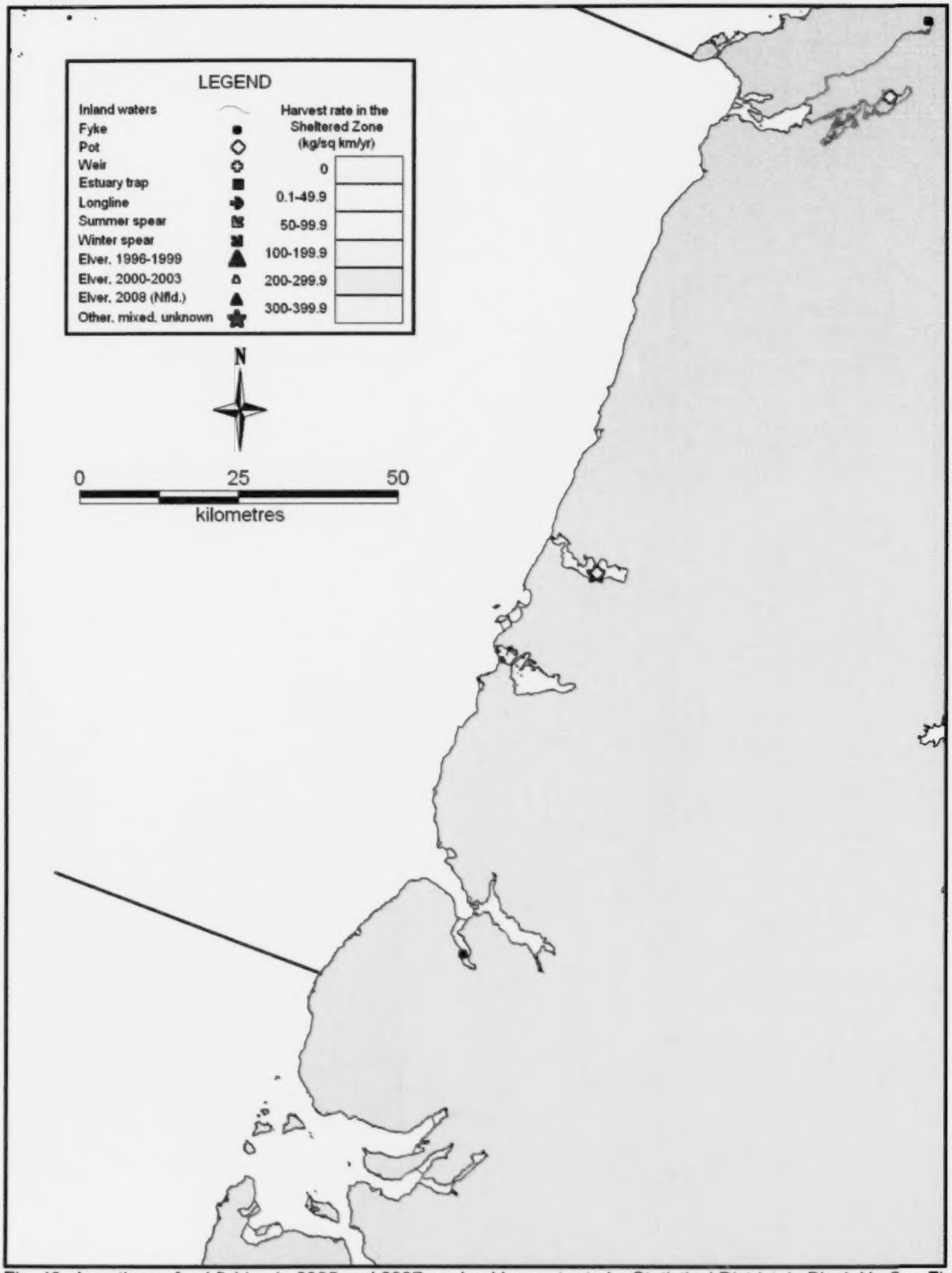

Fig. 48. Locations of eel fishing in 2005 and 2007, and eel harvest rate by Statistical District, in Block H. See Fig. 2 for block locations.

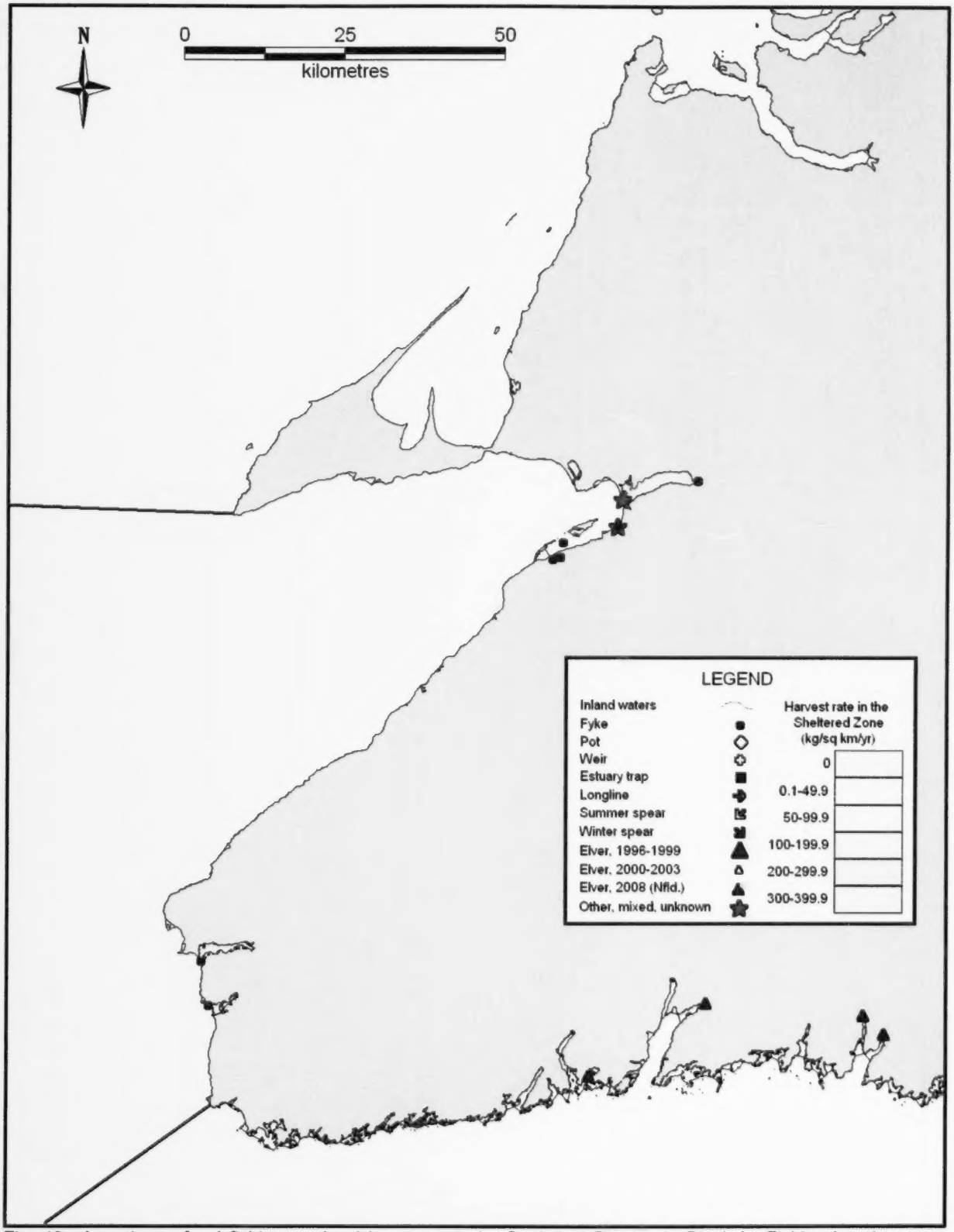

Fig. 49. Locations of eel fishing, and eel harvest rate by Statistical District, in Block I. Fishing locations are indicated for 2005 and 2007 (yellow and silver eel fisheries) and for 2008 (elver fisheries). See Fig. 2 for block locations.

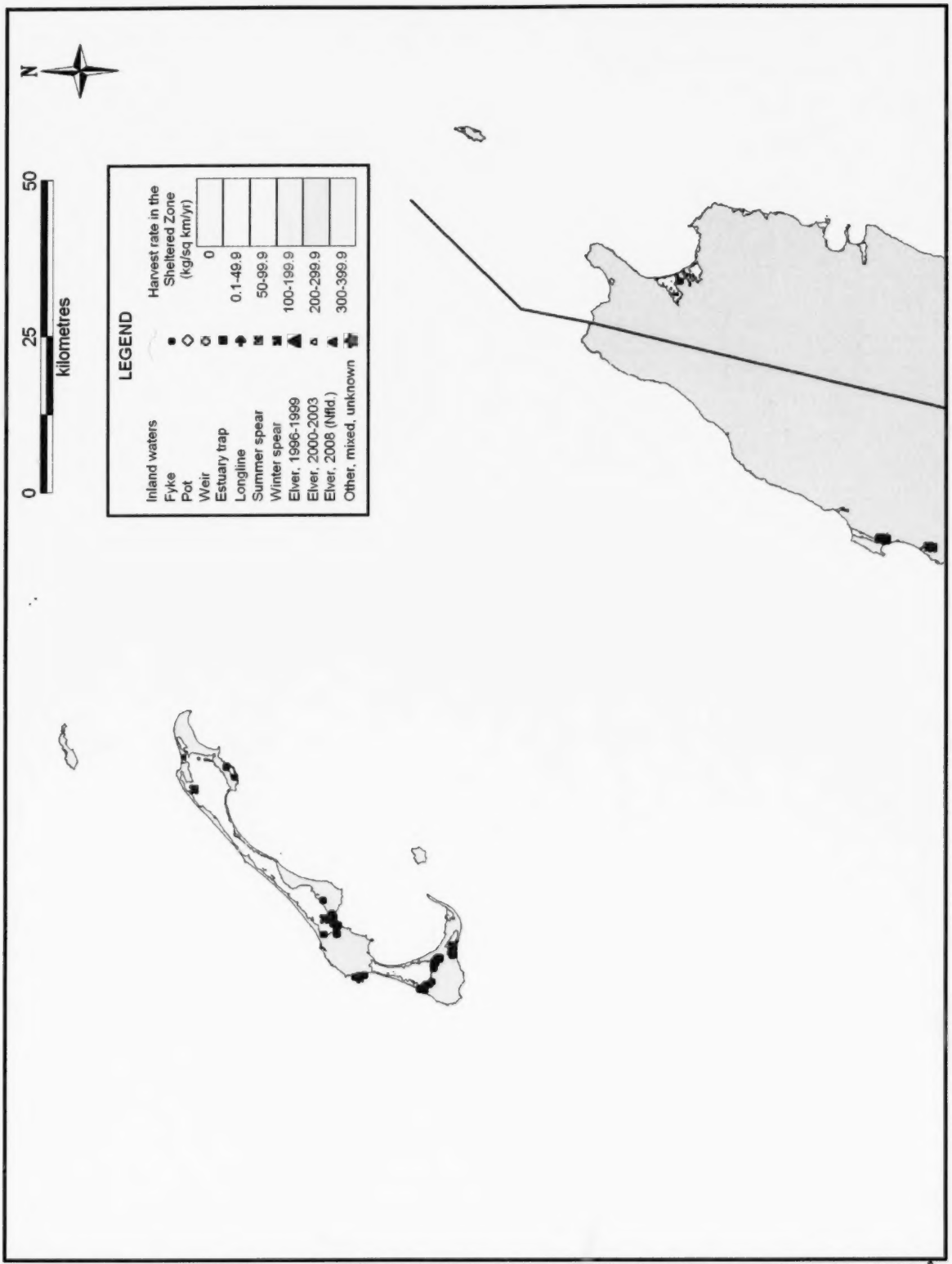

Fig. 50. Locations of eel fishing and eel harvest rate in Block J. Fishing locations are indicated for 2008 (Îles-de-la-Madeleine fyke and longline), for 2003-2004 (Îles-de-la-Madeleine winter spear), for 2005-2007 (Scotia-Fundy), and for 2006-winter 2010 (Gulf of St. Lawrence). Locations of winter spear sites on Îles-de-la-Madeleine are approximate. Harvest rates are shown by sector (Îles-de-la-Madeleine) and by county (elsewhere). See Fig. 2 for block locations.

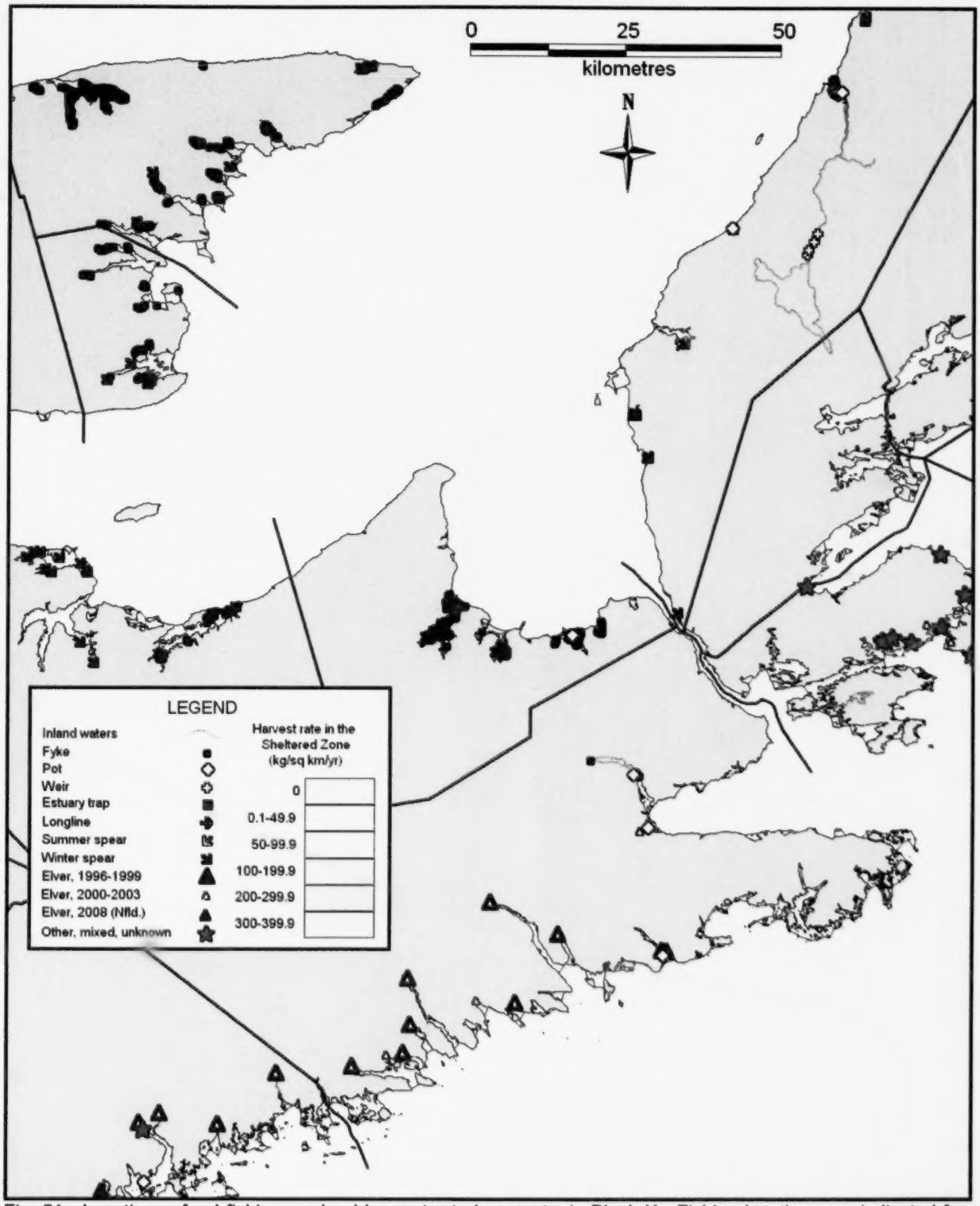

Fig. 51. Locations of eel fishing, and eel harvest rate by county, in Block K. Fishing locations are indicated for 2006-winter 2010 (Gulf of St. Lawrence), for 2005-2007 (Scotia-Fundy yellow and silver eel fisheries), and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

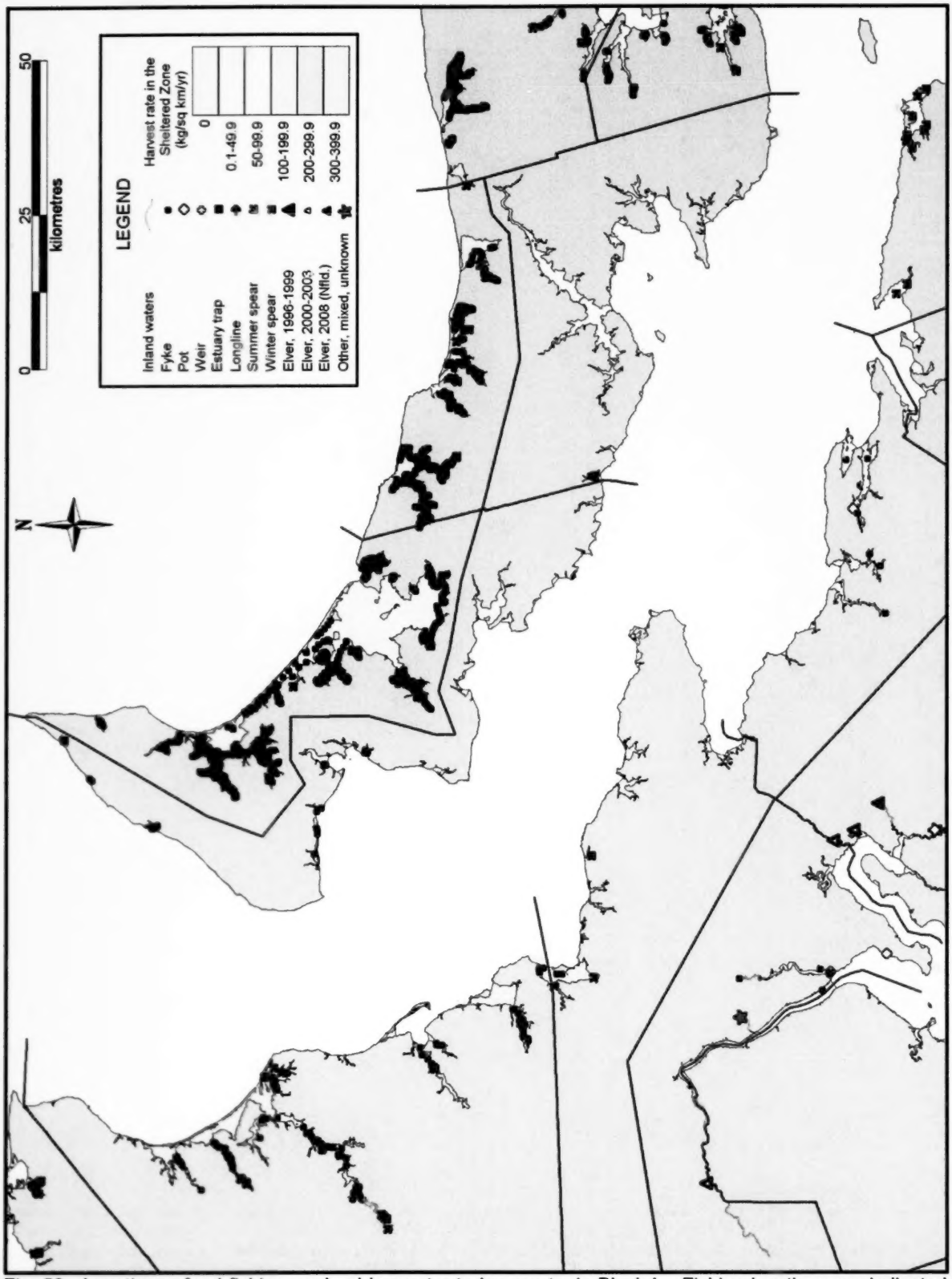

Fig. 52. Locations of eel fishing, and eel harvest rate by county, in Block L. Fishing locations are indicated for 2006-winter 2010 (Gulf of St. Lawrence), for 2005-2007 (Scotia-Fundy yellow and silver eel fisheries), and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

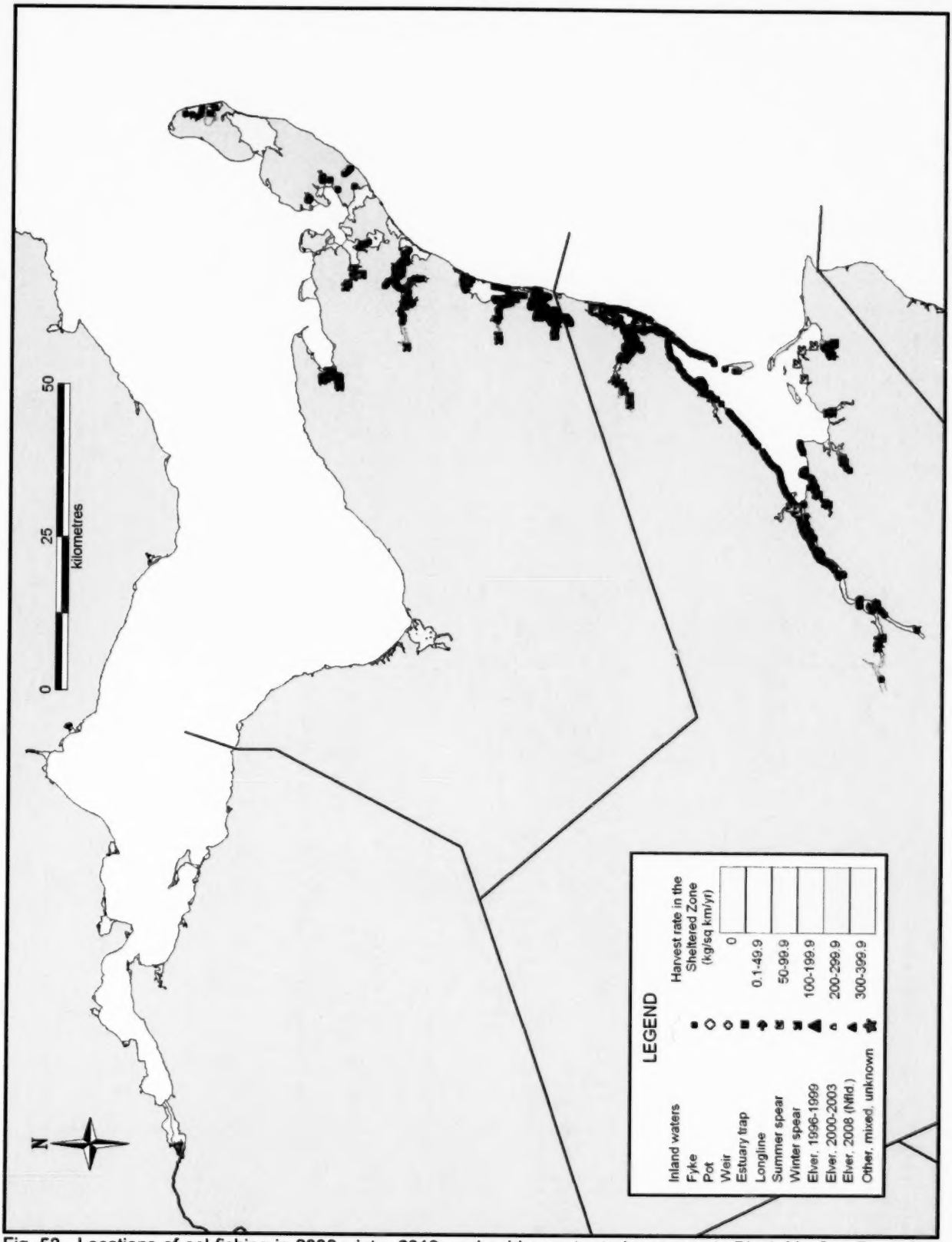

Fig. 53. Locations of eel fishing in 2006-winter 2010, and eel harvest rate by county, in Block M. See Fig. 2 for block locations.

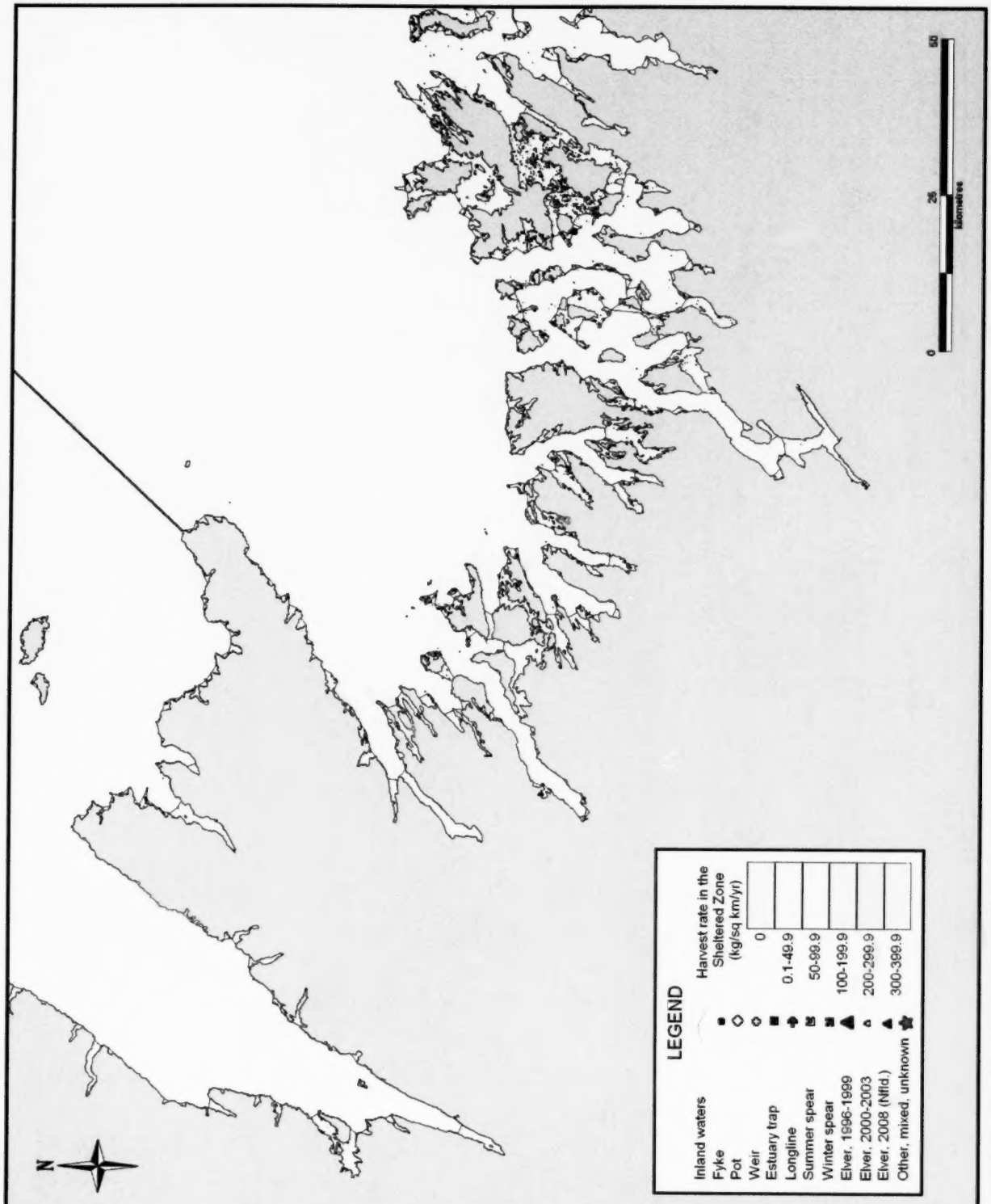

Fig. 54. Locations of eel fishing in 2005 and 2007, and eel harvest rate by Statistical District, in Block P. See Fig. 2 for block locations.

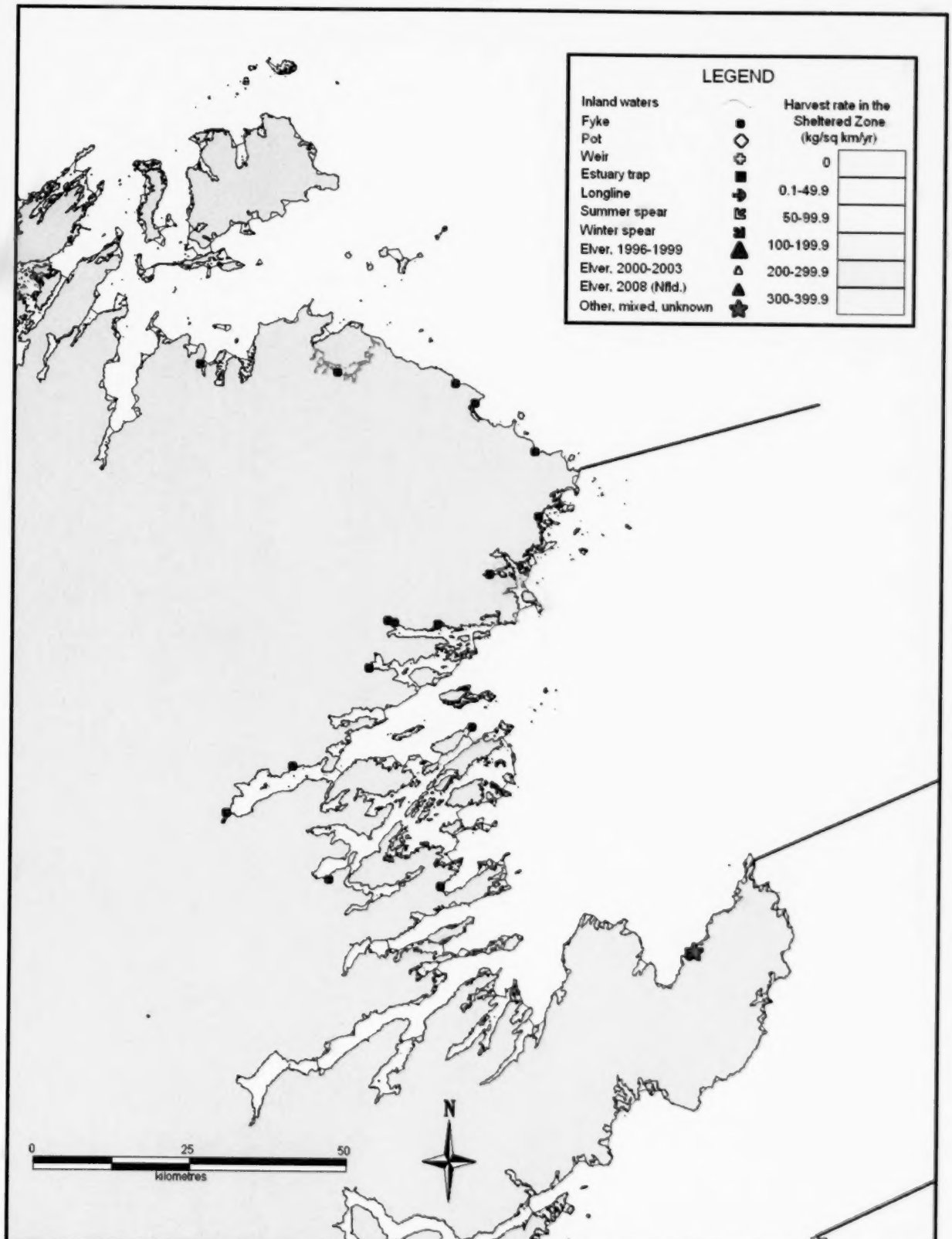

Fig. 55. Locations of eel fishing in 2005 and 2007, and eel harvest rate by Statistical District, in Block Q. See Fig. 2 for block locations.

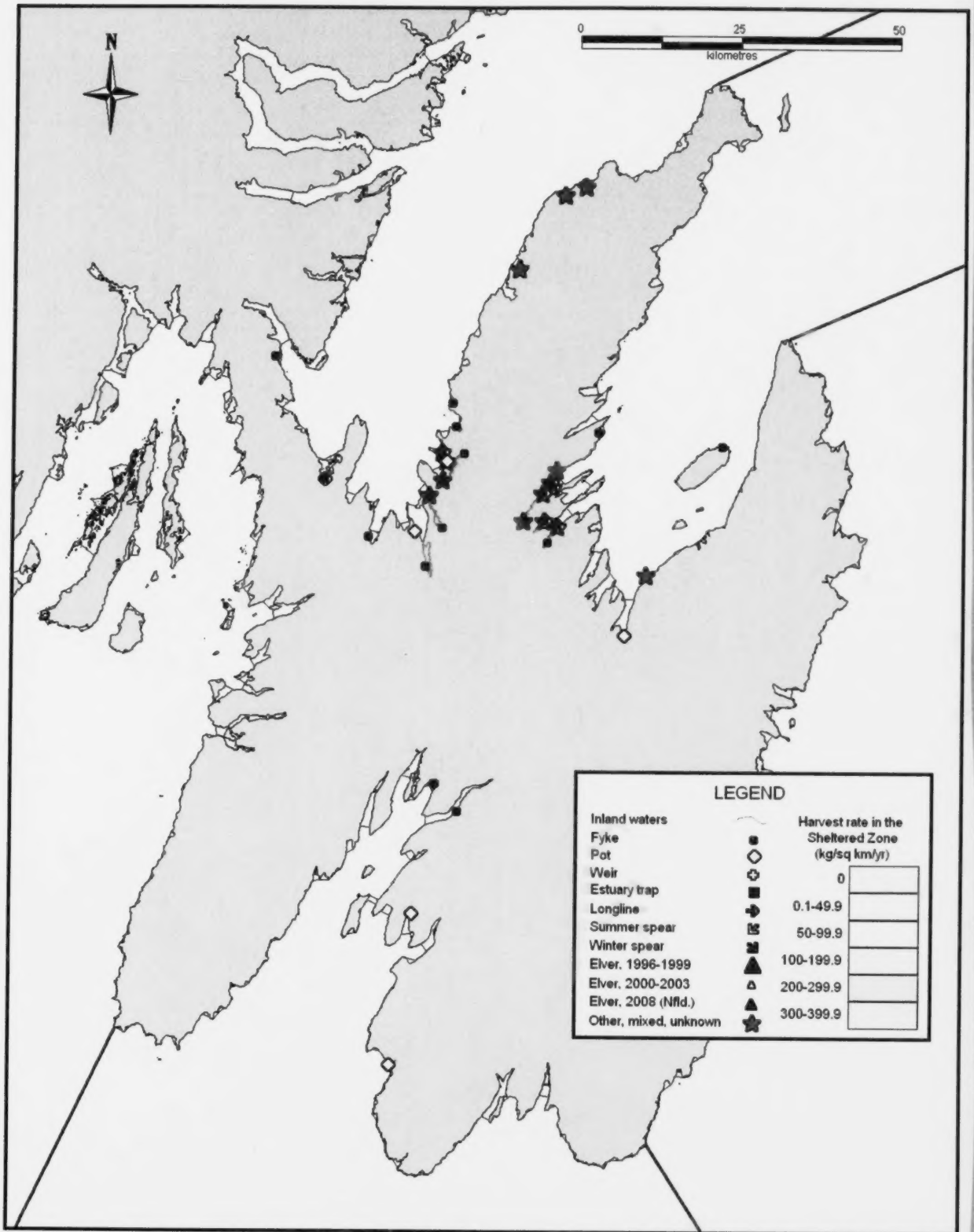

Fig. 56. Locations of eel fishing in 2005 and 2007, and eel harvest rate by Statistical District, in Block R. See Fig. 2 for block locations.

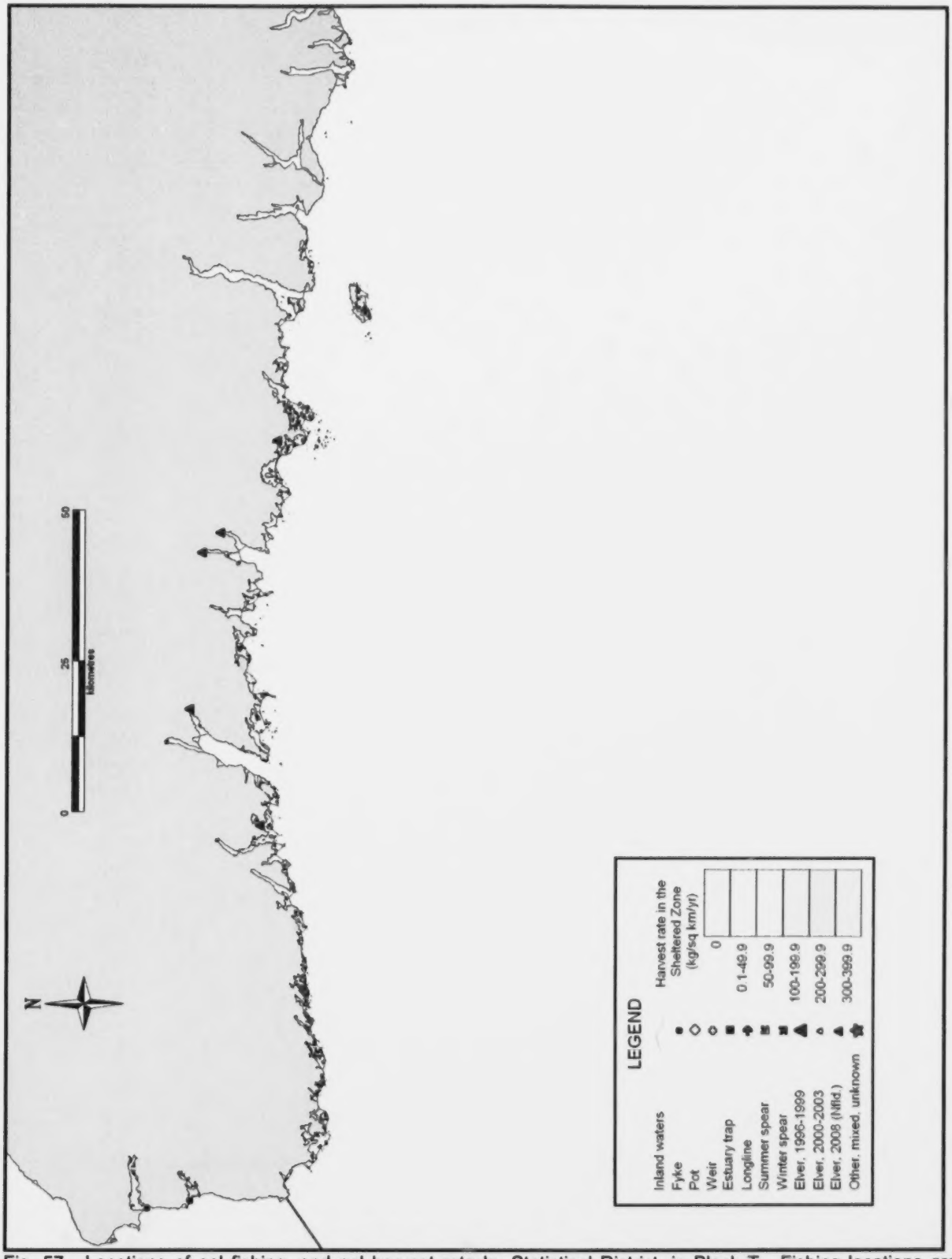

Fig. 57. Locations of eel fishing, and eel harvest rate by Statistical District, in Block T. Fishing locations are indicated for 2005 and 2007 (yellow and silver eel fisheries) and for 2008 (elver fisheries). See Fig. 2 for block locations.

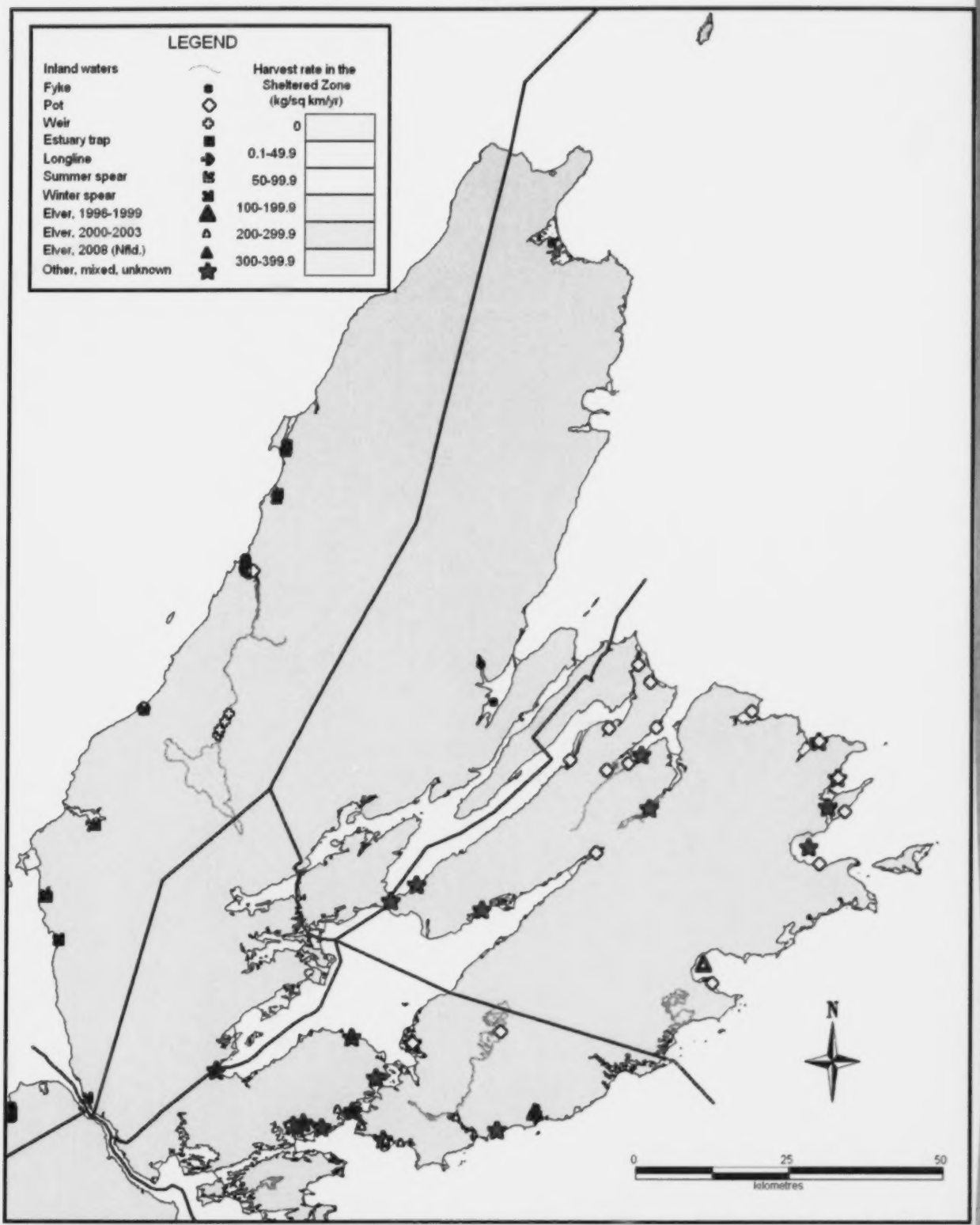

Fig. 58. Locations of eel fishing, and eel harvest rate by county, in Block U. Fishing locations are indicated for 2006-winter 2010 (Gulf of St. Lawrence), for 2005-2007 (Scotia-Fundy yellow and silver eel fisheries), and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

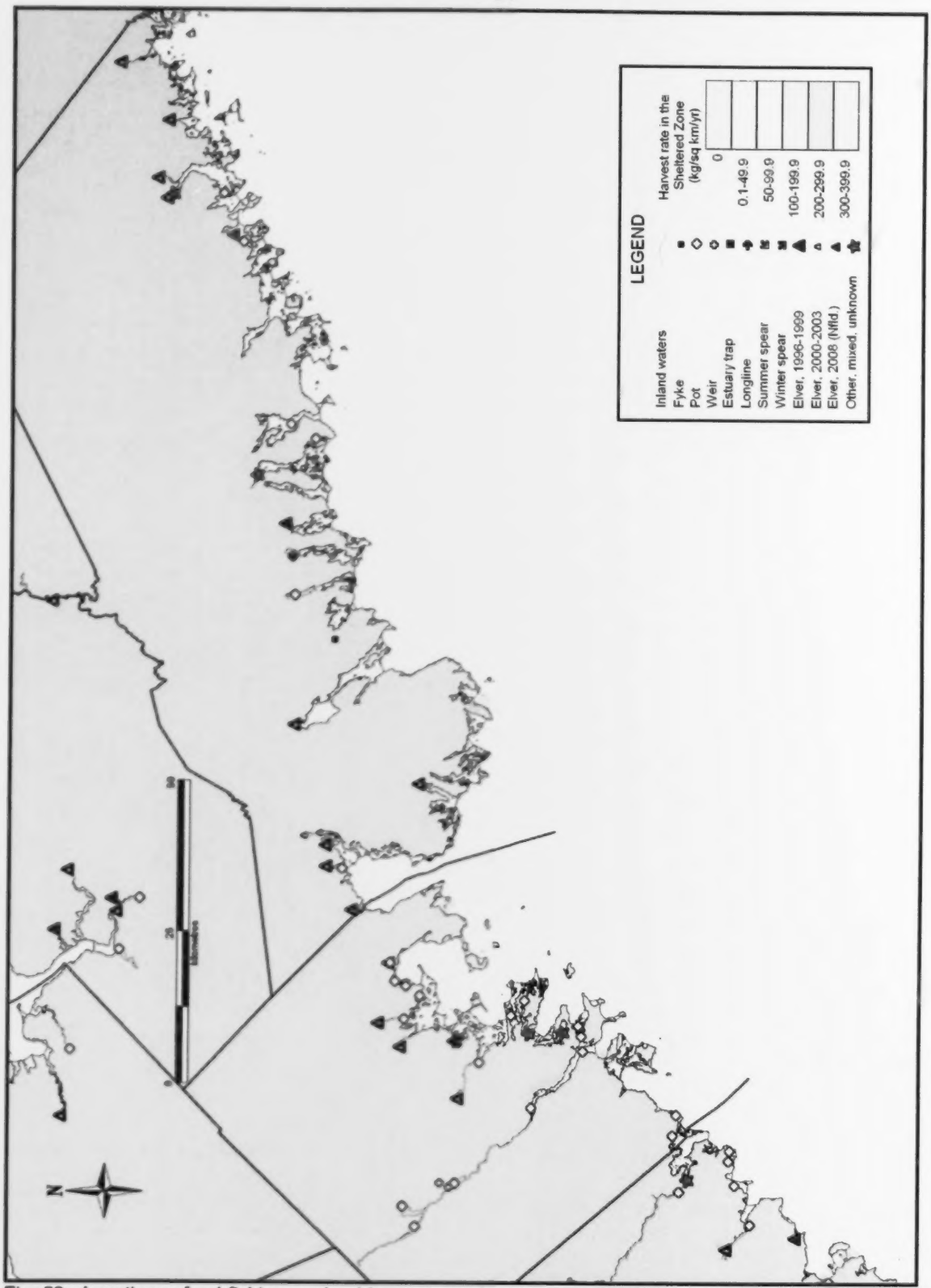

Fig. 59. Locations of eel fishing, and eel harvest rate by county, in Block W. Fishing locations are indicated for 2005-2007 (yellow and silver eel fisheries) and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

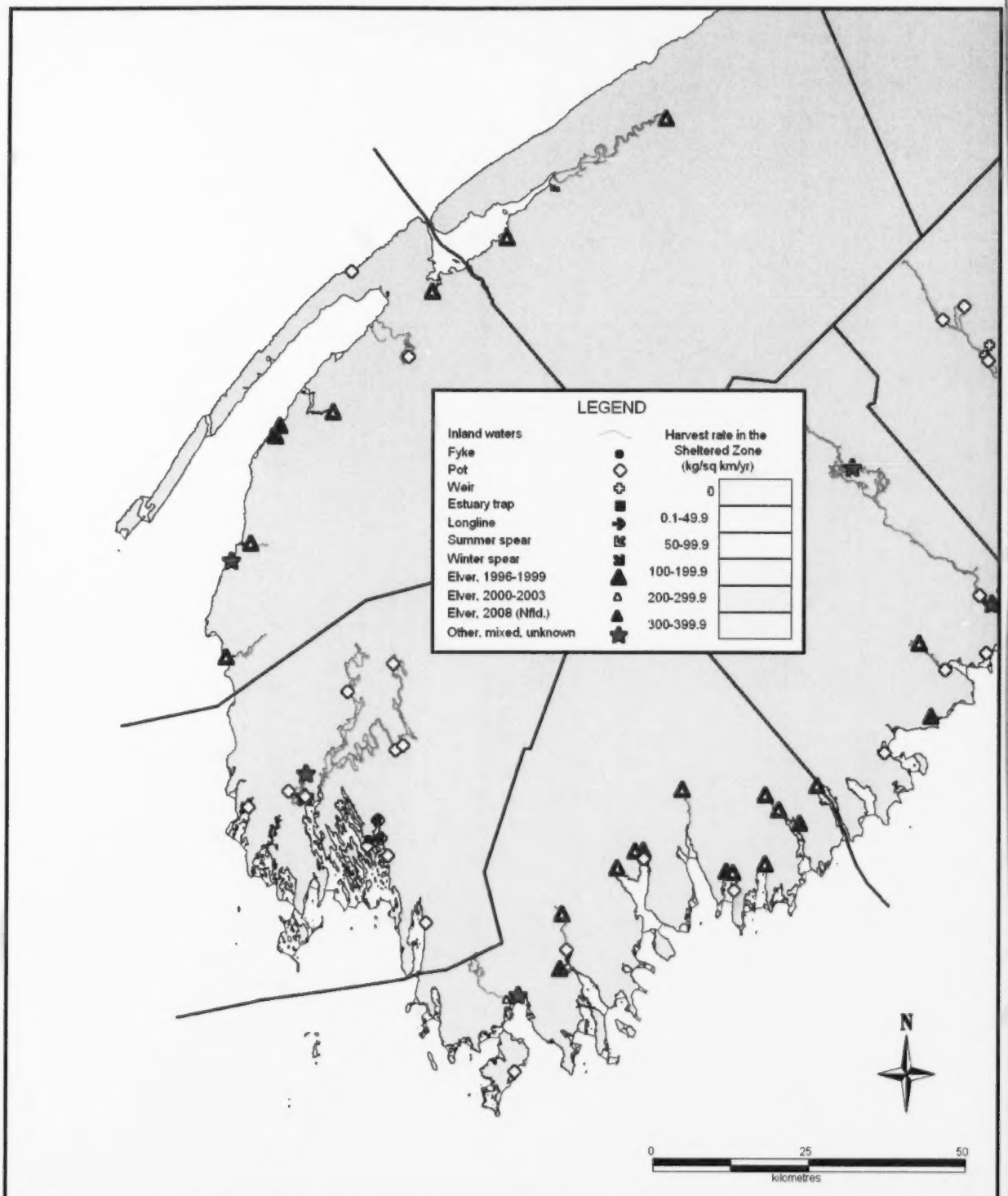

Fig. 60. Locations of eel fishing, and eel harvest rate by county, in Block X. Fishing locations are indicated for 2005-2007 (yellow and silver eel fisheries) and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

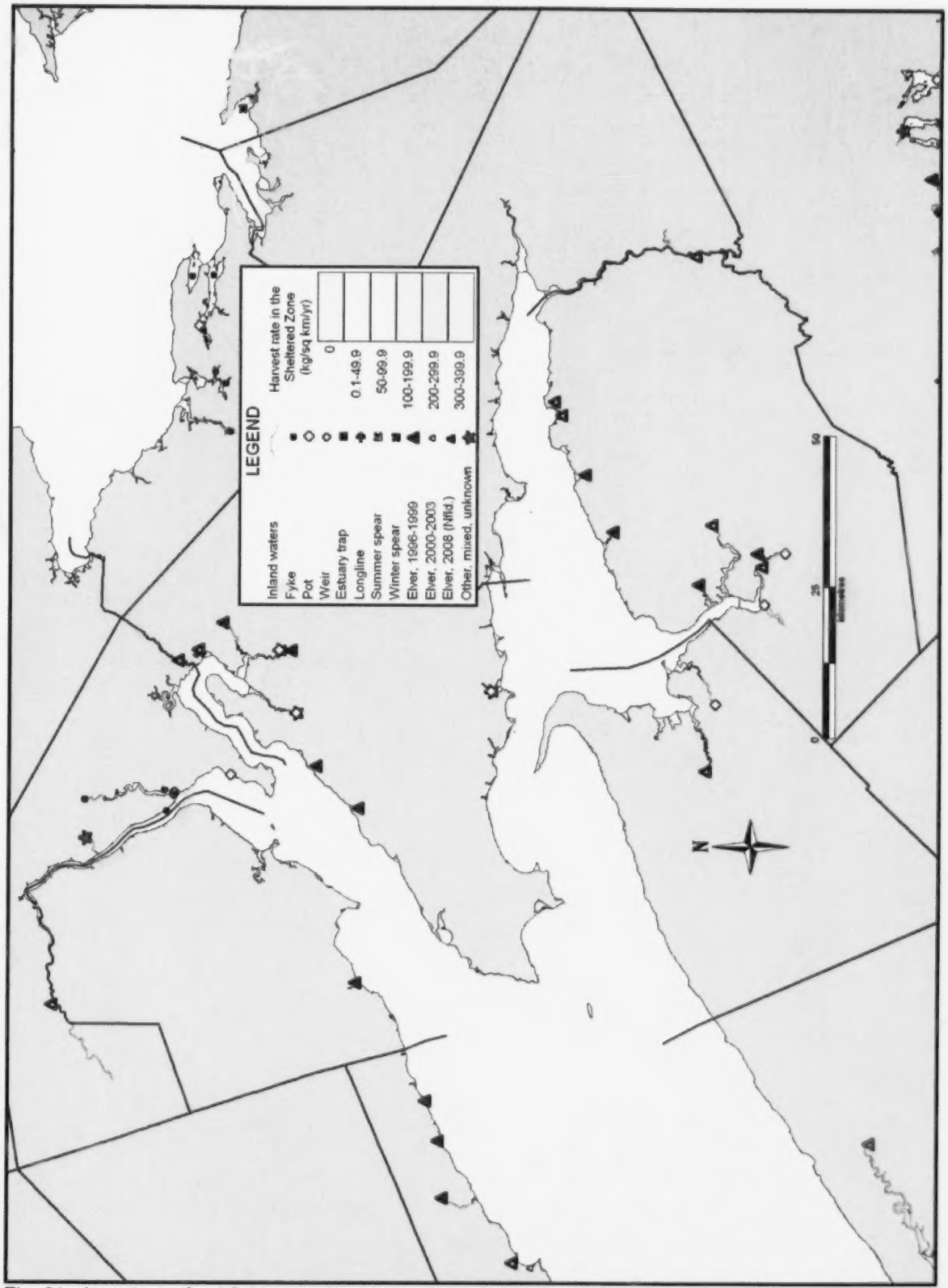

Fig. 61. Locations of eel fishing, and eel harvest rate by county, in Block Y. Fishing locations are indicated for 2006-winter 2010 (Gulf of St. Lawrence), for 2005-2007 (Scotia-Fundy yellow and silver eel fisheries), and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

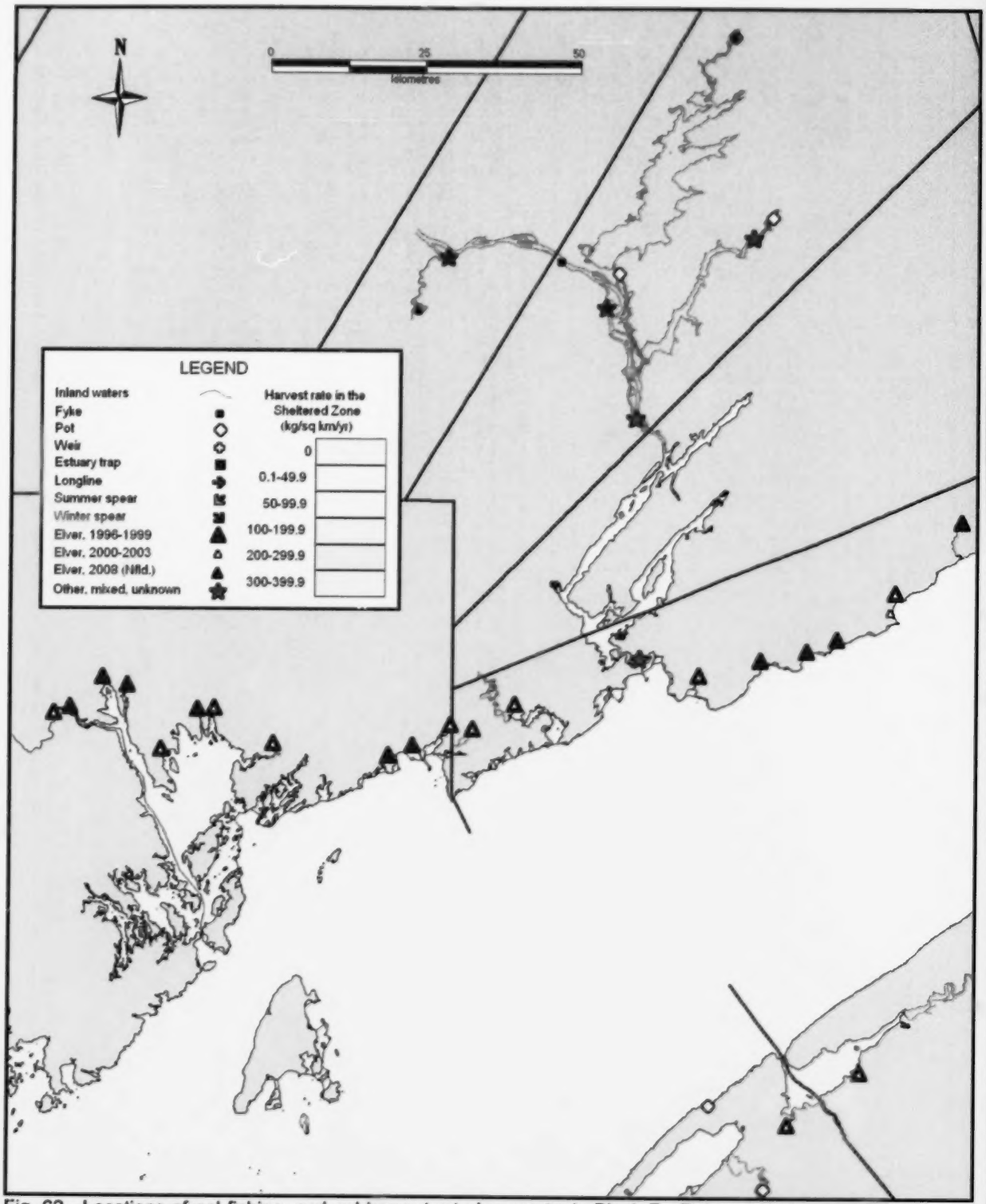

Fig. 62. Locations of eel fishing, and eel harvest rate by county, in Block Z. Fishing locations are indicated for 2005-2007 (yellow and silver eel fisheries) and for 1996-1999 and 2000-2003 (elver fisheries). See Fig. 2 for block locations.

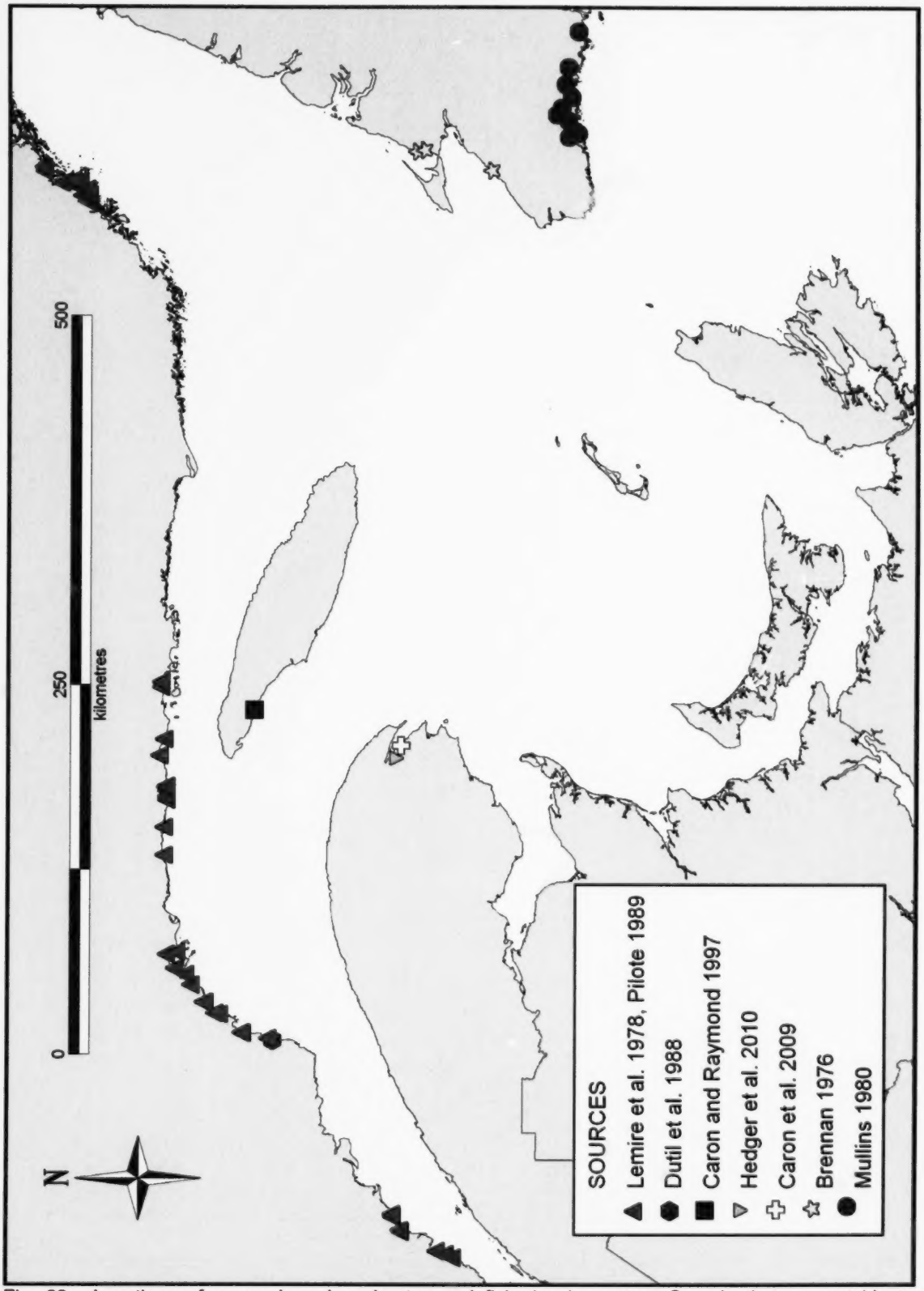

Fig. 63. Locations of research and exploratory eel fisheries in eastern Canada that are outside traditional commercial eel fishing areas. Eels were commonly found at all sites. Data for Lemire et al. 1978 and Pilote 1989 are from the compilation of Cairns et al. (2008).

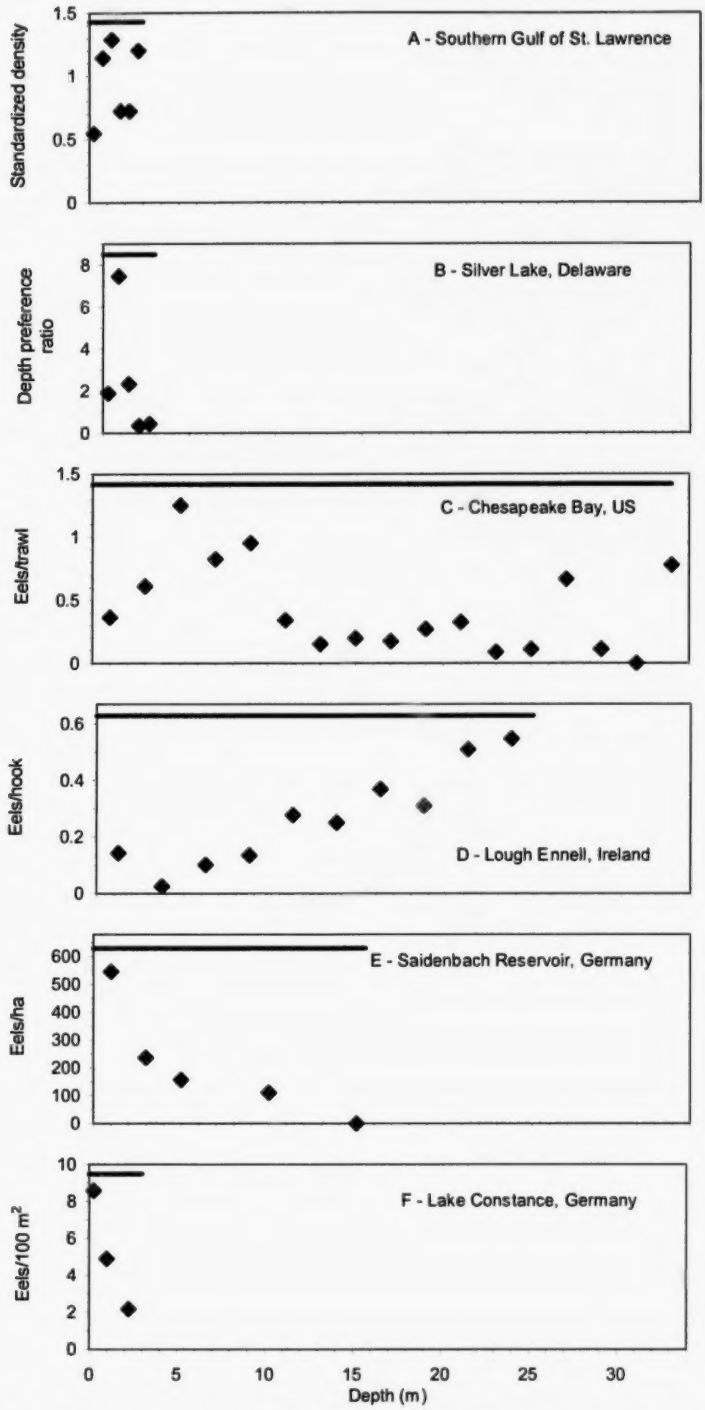

Fig. 64. Abundance indicators of American and European eels vs. depth. Horizontal lines indicate the range of depths covered in each study. A - densities from glass bottom boat surveys in the southern Gulf of St. Lawrence (J. Hallett, D. Cairns, and S. Courtenay, unpubl.). Densities are standardized by dividing densities within depth ranges by mean densities in all depth ranges. B - ratio of observed to expected counts from radio-tracking in Silver Lake, Delaware (Thomas 2006). C - eels per trawl in Chesapeake Bay, US (Geer 2003). D - eels per longline hook in Lough Ennell, Ireland (Yokouchi et al. 2009). E - densities from diving surveys, Saidenbach Reservoir, Germany (Schulze et al. 2004). F - mean densities across habitat types from electrofishing and trammel nets, Lake Constance, Germany (Fischer and Eckmann 1997).

Appendix A. List of files posted at http://www.dfo-mpo.gc.ca/Library/345546.zip, and stored in the DVD attached to the paper version of this atlas.

Path	Filename	Format	Approx. file size[a]	Comments
Atlas\	Readme	.doc	45 kb	This file describes archive contents
Atlas\BaseMaps\GIS[b]	EasternCanadaBaseMap	.shp, .tab	16 mb	This is the base map for all maps used in the atlas. The map was assembled from 1:50,000 sheets of the National Topographical Series, downloaded from http://www.geogratis.ca/geogratis/en/download/topographic.html. The map also includes Maine and part of New Hampshire. Coverage for these states is from the National Oceanic and Atmospheric Administration's Composite Shoreline Map, which was downloaded from http://shoreline.noaa.gov/data/datasheets/composite.html.
	EasternCanadaBaseMapLabels	.shp, .tab	12 kb	Gives labels for EasternCanadaBaseMap
	EasternCanadaCoastPolyline	.shp, .tab	12 mb	This map is derived from EasternCanadaBaseMap. It shows the coastline adjacent to the study area as a polyline.
	EasternCanadaIntertidalZone	.shp, .tab	6 mb	This map shows the intertidal zone of the study area in polygon format. It was assembled from 1:50,000 sheets downloaded from http://www.geogratis.ca/geogratis/en/download/topographic.html
	EasternCanadaSelectedRivers	.shp, .tab	500 kb	This map shows rivers and other watercourses adjacent to freshwater eel fishing locations.. It is derived from 1:50,000 sheets of the National Topographic Series, downloaded from http://www.geogratis.ca/geogratis/en/download/topographic.html.
Atlas\BoundaryMaps\GIS	GulfNorth-SouthBoundary	.shp, .tab	35 kb	Boundary between the Northern and Southern Gulf of St. Lawrence
	InternationalWaterBoundaries	.shp, .tab	8 kb	Canada-France and Canada-US boundaries, from Canadian Hydrographic Nautical charts 4011, 4015, and 4047.
	LandBoundaries	.shp, .tab	90 kb	Provincial, state, and Canada-US boundaries
	MaritimeProvCountyPolylines	.shp, .tab	320 kb	Maritime Province county boundaries, assembled from maps downloaded from http://www.snb.ca/gdam-igec/e/2900e_1.asp, http://www.gov.pe.ca/gis/download.php3?name=countylines&file_format=MIF&referer=http%3A%2F%2Fwww.gov.pe.ca%2Fgis%2Findex.php3%3Fnumber%3D77584%26lang%3DE, and obtained from Kevin Legere of the Nova Scotia Geomatics Centre, Amherst NS.
	MaritimeProvCountyLabels	.shp, .tab	10 kb	Labels for MaritimeProvCountyPolylines
	NfldStatDistrictLabels	.shp, .tab	10 kb	Labels for NfldStatDistrictPolylines
	NfldStatDistrictPolylines	.shp, .tab	6 kb	Boundaries between Newfoundland Statistical Districts
	PageBlockLabels	.shp, .tab	11kb	Labels for PageBlocks
	PageBlocks	.shp, .tab	6 kb	Blocks which define map areas portrayed in detailed habitat maps
	SectorPolygons	.shp, .tab	12 mb	Geographic sectors used to sum habitat areas
	TransectBoundaries	.shp, .tab	6 kb	Boundaries of 50 km wide transects on the Atlantic coast
	TransectLabels	.shp, .tab	6 kb	Labels for TransectBoundaries

Appendix A (continued)

Path	Filename	Format	Approx. file size[a]	Comments
Atlas\BoundaryMaps\JPG	Fig01	.jpg	1 mb	Eastern Canada and St. Pierre and Miquelon, showing sectors
	Fig02	.jpg	700 kb	Eastern Canada and St. Pierre and Miquelon, showing page blocks
	Fig03	.jpg	500 kb	The Maritime Provinces and Îles-de-la-Madeleine, showing Maritime Provinces counties.
	Fig04	.jpg	500 kb	Newfoundland and St. Pierre and Miquelon, showing Newfoundland Statistical Districts
Atlas\DepthProfiles\GIS	DepthProfileLabels	.shp, .tab	12 kb	Labels for DepthProfiles
	DepthProfiles	.shp, .tab	7 kb	Locations of 10 km depth profiles
Atlas\DepthProfiles\JPG	Fig41	.jpg		Location of 10 km depth profiles
Atlas\EelFisheries\GIS	CanadaFishingLocationsAll	.shp, .tab	300 kb	Locations of all eel fishery sites in the study area
	CanadaShelteredHarvestRate	.shp, .tab	10 mb	Map showing rate of eel harvest (kg/km^2/yr) by county, statistical district, or sector
	FishingLocationLegend	.shp, .tab	190 kb	Legend for fishing location maps
	IdeMadeleineFyke	.shp, .tab	8 kb	Location of fyke nets on Îles-de-la-Madeleine
	IdeMadeleineLongline	.shp, .tab	5 kb	Location of longlines on Îles-de-la-Madeleine
	NfldElver	.shp, .tab	5 kb	Location of elver fisheries in Newfoundland
	NfldFyke	.shp, .tab	8 kb	Location of fyke nets in Newfoundland
	NfldPot	.shp, .tab	5 kb	Location of pots in Newfoundland
	NfldUnknownGear	.shp, .tab	5 kb	Location of gear of unknown type in Newfoundland
	ResearchFishingLocations	.shp, .tab	9 kb	Location of research fishing for eels
	ScotiaFundyElvers00-03	.shp, .tab	8 kb	Location of elver fisheries in Scotia-Fundy in 2000-2003
	ScotiaFundyElvers96-99	.shp, .tab	8 kb	Location of elver fisheries in Scotia-Fundy in 1996-1999
	ScotiaFundyFyke	.shp, .tab	7 kb	Location of fyke nets in Scotia-Fundy
	ScotiaFundy-OtherMixUnk	.shp, .tab	8 kb	Location of other, mixed, or unknown gear types in Scotia-Fundy
	ScotiaFundyPot	.shp, .tab	8 kb	Location of pots in Scotia-Fundy
	ScotiaFundyWeir	.shp, .tab	5 kb	Location of weirs in Scotia-Fundy
	SGulfStLaw-Fyke	.shp, .tab	140 kb	Location of fyke nets in the southern Gulf of St. Lawrence
	SGulfStLaw-Pot	.shp, .tab	5 kb	Location of pots in the southern Gulf of St. Lawrence
	SGulfStLaw-SummerSpear	.shp, .tab	5 kb	Location of summer spearing in the southern Gulf of St. Lawrence
	SGulfStLaw-Weir	.shp, .tab	5 kb	Location of weirs in the southern Gulf of St. Lawrence
	SGulfStLaw-WinterSpear	.shp, .tab	15 kb	Location of winter spearing in the southern Gulf of St. Lawrence
	StLawEstuaryTraps	.shp, .tab	8 kb	Location of estuary traps in the St. Lawrence Estuary
Atlas\EelFisheries\JPG	Fig44	.jpg	900 kb	Location of eel fishing sites in eastern Canada and St. Pierre and Miquelon
	Fig45, Fig46	.jpg	200-300 kb	Location of eel fishing sites in the St. Lawrence estuary
	Fig47 to Fig62	.jpg	200-800 kb	Location of eel fishing sites and harvest rates in eastern Canada and St. Pierre and Miquelon
	Fig63	.jpg	600 kb	Location of research fishing for eels
Atlas\EelFisheries\PDF	Fig44	.pdf	1 mb	Location of eel fishing sites in eastern Canada and St. Pierre and Miquelon

Appendix A (continued)

Path	Filename	Format	Approx. file size[a]	Comments
Atlas\ExposureClassification\GIS	AtlanticNfld-ExposTideBySector	.shp, .tab	6 mb	Exposure and tide classification of Atlantic-Newfoundland, by sector
	EasternCanadaCoastPolyline-ByExposureZone	.shp, .tab	13 mb	The coastline of the study area, divided by exposure zone
	ExposureTideLegends-ByBlock	.shp, .tab	60 kb	Legends for exposure and tide maps, by page block
	ExposureTideLegends-ByRegion	.shp, .tab	35 kb	Legends for exposure and tide maps, by region
	ScotiaFundy-ExposTideBySector	.shp, .tab	8 mb	Exposure and tide classification of Scotia-Fundy, by sector
	StLawEstGulf-ExposTide	.shp, .tab	9 mb	Exposure and tide classification of the Estuary and Gulf of St. Lawrence
Atlas\ExposureClassification\JPG	Fig07	.jpg	800 kb	Exposure and tide classification in the study area
	Fig08	.jpg	900 kb	Exposure and tide classification in the St. Lawrence Estuary and Gulf
	Fig09	.jpg	600 kb	Exposure and tide classification in Newfoundland
	Fig10	.jpg	800 kb	Exposure and tide classification in Scotia-Fundy
	Fig25 to Fig37	.jpg	200-700 kb	Exposure and tide classification in Atlantic-Fundy, by page block
Atlas\ExposureClassification\PDF	NB-NS-BayofFundy	layered .pdf	3 mb	Exposure and tide classification of New Brunswick-Bay of Fundy and Nova Scotia-Bay of Fundy
	NL-EastCoast	layered .pdf	2 mb	Exposure and tide classification of Newfoundland east coast
	NL-NortheastCoast	layered .pdf	2 mb	Exposure and tide classification of Newfoundland northeast coast
	NL-SouthCoastAndSPM	layered .pdf	2 mb	Exposure and tide classification of the Newfoundland south coast and St. Pierre and Miquelon
	NL-StraitOfBelleIsle	layered .pdf	600 kb	Exposure and tide classification of Newfoundland Strait of Belle Isle
	NS-AtlanticCapeBreton	layered .pdf	2 mb	Exposure and tide classification of Atlantic Cape Breton
	NS-BrasDorLakes	layered .pdf	800 kb	Exposure and tide classification of the Bras D'Or Lakes
	NS-EasternShore	layered .pdf	1 mb	Exposure and tide classification of Nova Scotia eastern shore
	NS-GulfOfMaineSouthShore	layered .pdf	2 mb	Exposure and tide classification of Nova Scotia Gulf of Maine and south shore
Atlas\ExposurexDepths\GIS	Atlantic-ExposDepthTransects	.shp, .tab	3 mb	Exposure and depth classification in three 50 km wide transects in the Atlantic region
	Atlantic-ExposDepthTransects-Legend	.shp, .tab	20 kb	Legend for Atlantic-ExposDepthTransects
	StLaw-ExposDepthbySector-Method1	.shp, .tab	33 mb	Exposure and depth classification for the St. Lawrence Estuary and Gulf, using Method 1. Depth ranges are intertidal, 0-2 m, 2-4 m, 4-6 m, 6-10 m, and >10 m.
	StLaw-ExposDepthbySector-Method2	.shp, .tab	33 mb	Exposure and depth classification for the St. Lawrence Estuary and Gulf, using Method 2. Depth ranges are intertidal, 0-2 m, 2-4 m, 4-6 m, 6-10 m, and >10 m.
	StLaw-ExposDepth-2-4m-Method1	.shp, .tab	17 mb	Exposure and depth classification for the St. Lawrence Estuary and Gulf, using Method 1. Depth ranges are 2-3 m and 3-4 m.
	StLaw-ExposDepth-2-4m-Method2	.shp, .tab	17 mb	Exposure and depth classification for the St. Lawrence Estuary and Gulf, using Method 2. Depth ranges are 2-3 m and 3-4 m.
	StLaw-ExposDepthLegend	.shp, .tab	90 kb	Legend for StLaw-ExposDepthBySector, Methods 1 and 2

Appendix A (continued)

Path	Filename	Format	Approx. file size[a]	Comments
Atlas\ExposurexDepths\JPG	Fig11 to Fig24	.jpg	400 kb-1 mb	Exposure and depth classification in the St. Lawrence Estuary and Gulf, by page block
	Fig38a, Fig38b, Fig38c	.jpg	60 kb-1 mb	Exposure and depth classification in the Bonavista Nfld 50 km wide transect
	Fig39a, Fig39b, Fig39c	.jpg	90-600 kb	Exposure and depth classification in the Burgeo Nfld 50 km wide transect
	Flg40a,.Fig40b, Fig40c	.jpg	100-500 kb	Exposure and depth classification in the Liverpool NS 50 km wide transect
Atlas\ExposurexDepths\PDF	NB-GulfNewBrunswick	layered .pdf	5 mb	Exposure and depth classification of Gulf New Brunswick
	NL-NfldWestCoast	layered .pdf	9 mb	Exposure and depth classification of Newfoundland west coast
	NS-GulfCapeBreton	layered .pdf	4 mb	Exposure and depth classification of Gulf Cape Breton
	NS-GulfNovaScotiaMainland	layered .pdf	4 mb	Exposure and depth classification of Gulf Nova Scotia mainland
	PEI	layered .pdf	6 mb	Exposure and depth classification of PEI
	QC-Anticosti	layered .pdf	4 mb	Exposure and depth classification of Anticosti
	QC-Gaspe	layered .pdf	4 mb	Exposure and depth classification of Gaspé
	QC-GulfNorthShore	layered .pdf	12 mb	Exposure and depth classification of the Gulf North Shore
	QC-IlesDeLaMadeleine	layered .pdf	3 mb	Exposure and depth classification of Îles-de-la-Madeleine
	QC-Saguenay	layered .pdf	3 mb	Exposure and depth classification of Saguenay
	QC-StLawrenceLowerEstuary	layered .pdf	4 mb	Exposure and depth classification of the St. Lawrence Lower Estuary
	QC-StLawrenceMiddleEstuary	layered .pdf	4 mb	Exposure and depth classification of the St. Lawrence Middle Estuary
	Transect-BonavistaNfldEastCoast	layered .pdf	5 mb	Exposure and depth classification of the 50 km wide transect at Bonavista on the Newfoundland east coast
	Transect-BurgeoNfldSouthCoast	layered .pdf	4 mb	Exposure and depth classification of the 50 km wide transect at Burgeo on the Newfoundland south coast
	Transect-LiverpoolNSSouthShore	layered .pdf	3 mb	Exposure and depth classification of the 50 km wide transect at Liverpool on the Nova Scotia south shore
Atlas\TextAndSpreadsheetFiles	EasternCanadaAquaticAtlas-100dpi	.pdf	10 mb	.pdf file of the atlas, made using PDF Creator with colour image set at JPEG medium compression with 100 dpi resampling
	EasternCanadaAquaticAtlas-200dpi	.pdf	24 mb	.pdf file of the atlas, made using PDF Creator with colour image set at JPEG low compression and no resampling
	EasternCanadaAquaticAtlas	.xls	400 kb	Contains tables used in the atlas

[a]Arc and MapInfo layers are formed by several files each. File sizes are the approximate sum of the sizes of individual Arc or MapInfo files

[b]GIS folders have Arc and MapInfo subfolders, which contain files in these respective formats